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ABSTRACT

Through a historical review of guideline aims and objectives in Ontario from 1950 to 1978, this paper seeks to define trends in guideline objectives writing. A category system for educational outcomes serves as the analytical framework for the study. This system defines the primary domains for describing discriminative knowledge, including a hierarchy of categories within each domain, dynamic interrelationships between categories and subcategories, and context dimensions drawn from the image of the educated person. The study reviews all guidelines for compulsory K-10 subjects, two special reports bearing on aims of education in Ontario, and a sampling of other guidelines. The trends identified include an increasing proliferation of objectives lists for each subject area, greater breadth of proposed aims, growing emphasis on complex intellectual skills, and a heavier preponderance of self-oriented outcomes. The author concludes that guideline statements need to be interpreted within the framework from which they were generated and can be improved by the progressive delineation of intended outcomes. (Author/WD)

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THE SCOPE OF GUIDELINE AIMS AND OBJECTIVES

FLOYD G. ROBINSON
Ontario Institute for Studies in Education

JUNE, 1976

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THE SCOPE OF GUIDELINE AIMS AND OBJECTIVES

Floyd G. Robinson

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DEC 1 2 1980

I am indebted to a number of people who assisted in the conduct of this project. Carolynne Bennett, Lucy Robinson and Floyd White read sections of the Guidelines and compared interpretations with the author. Lucy Robinson typed the draft, and Dolores Klingspon the final document, giving up evenings and week-ends for that purpose. Floyd White assisted at all stages of the project, undertaking the difficult task of tracking down Guidelines from the 1940s and '50s, suggesting trends and interpretations and offering critical comment on the first draft.

While all the above-named people have contributed materially to the quality of the final product, responsibility for the interpretations and conclusions presented rests entirely with the author.

Floyd G. Robinson

June 1978

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A: PROJECT QUESTIONS, PROCEDURES AND MAIN RESULTS

Orienting Questions

In the prospectus for the study, the author's intentions were set out in terms of the following set of "hypotheses that might be examined":

(1) Current curriculum guidelines present a comprehensive array of objectives that is congruent with the notion of a broadly educated, self-directed educand.

(2) Over the long term (say, 25 years since the "Gray Book"), the trend has been toward more and more broadly conceived aims with an increasing emphasis on: (a) intellectual skills in general, (b) complex intellectual performance in particular, (c) affective outcomes (attitudes, values, beliefs) and (d) some elements of the epistemology of the various disciplines.

(3) (Contrary to expectations), the post-"back-to-the-basics" guidelines have not narrowed the range of proposed objectives.

Having made the standard gesture to academic tradition, the author would like to argue that he approached the task with a considerably more open mind than is suggested by these hypotheses, and that his orienting questions were, in fact, more of this nature:

(1) What kinds of statements have appeared in guidelines over the past quarter century that bear on aims and objectives (in addition to lists so designated)? What implications do the characteristics of these materials have for a study of the scope of aims and objectives?

(2) What trends can be observed in the frequency, organization and precision of clearly designated statements of aims and objectives?

(3) What meaning can be attached to the term "the breadth of guideline aims and objectives"? What trends in breadth and emphases are discernible over this period of time?

(4) How could we characterize the breadth and emphasis of the present set of aims and objectives? What effect has the "back-to-the-basics" movement had on guideline statements of aims and objectives? Is there any evidence of an actual or impending narrowing of the intended outcomes of public education?

(5) What implications does the preceding analysis have for (i) projects that take guideline aims and objectives as the starting point for serious inquiry and decision making, (ii) for changes in guideline objectives writing, (iii) for CODE?

Procedure

The general outline of a possible approach was also described in the study prospectus as follows:

(1) Devise/adapt a category system for educational outcomes (objectives).

(2) Plot guideline expectations on this system, taking a representative sample of guidelines for that purpose from (a) the "Gray Book" days, (b) the pre-"back-to-the-basics guidelines, and (c) emerging guidelines.

In retrospect, the author cannot account for the wording of the first part of the procedure since it had always been his intention to use (with or without adaptation) the category system that had been developed in the Experimental Program in Curriculum Consultancy to assist groups who were specifically dealing with guideline implementation. The main task undertaken in this regard for the present study, then, was to write a description of the origin of this system, the procedures used to construct and refine it, and its current structure. This constitutes the substance of Section B of this report.

The second step in the proposed procedure involved:

(1) the selection of time periods (the guidelines pertaining to which would be the object of this study) was proposed, in expectation that the actual number of guidelines issued during the past quarter century would be far too large to allow study of the total set;

(2) selection of a "representative sample" of guidelines for each of the time periods chosen; and

(3) "plotting guideline expectations" on the category system.

After consultation with some "veterans" (i.e., principals who had been teaching for the past quarter century), the following periods were chosen as appropriate for the determination of any trends that might exist.

(i) <u>The Early 1950's</u>:

At this point in time the celebrated "Gray Book" (4-1) had been in effect for fifteen years; a set of guidelines for the newly integrated Intermediate Division (5-3) had just been released to guide local curriculum committees; and many such

committees were engaged in local curriculum development, taking advantage of the extraordinary curriculum making powers given them in a Ministry Memorandum attributed to Porter (5-0).

(ii) The Early-Mid 1960's:

This period was marked by: the continued existence of the "Gray Book" in a marginally revised form (6-1); the "Robarts Plan" (1962); the first impact of the major discipline-oriented curriculum projects on guideline content (e.g., Mathematics, Intermediate Division, Grade 7, 1964); and the work of the Ontario Curriculum Institute (6-9-a, b, c, d, e, f).

(iii) The Late 1960's-Early 1970's:

This period was marked by: the introduction of the High School Credit System (7-4-a); the release of the compilation of the Primary and Junior grade documents that had begun to appear in 1966 (7-2); the release of the Hall-Dennis Report (6-12); and the appearance of new Intermediate guidelines in English (1969), Science (1972), History (1973), and Geography (1974).

(iv) The Present (Spring, 1978):

The current guideline situation may be described by: the existence of a revised P_1J_1 in two parts (7-1; 7-3); and the release of post-"back-to-the-basics" Intermediate grade guidelines for Geography, History, Science, Mathematics, and English.

As for obtaining a "representative sample" of guidelines, the project group very early decided to examine all the guidelines for compulsory K-10

subjects; the two special reports bearing on aims of education in Ontario (5-1; 6-12), and a sampling of other guidelines that were both available and of interest for some special purpose (including among them, existing Senior guidelines in Mathematics, English, Biology, Geography (draft), Music, and Family Studies). Our main justification for concentrating on the K-10 interval was that the dispersal of students among the various options available at the senior high school level, coupled with the fact that only a minority of students (probably no more than one in five) completed grade 13 at the beginning of the period under study, would make any comparison of trends at the Senior level meaningless. Another way of putting it is that this study is concerned with the obligatory aims and objectives of the common public education, rather than the varieties of subject options that the student may follow in pursuit of these aims. The claim that there has been a substantial growth in the availability of specialized subject matter courses over the past quarter century is not in doubt. What is in question is whether the aims and objectives underlying the common public education have changed in any appreciable way.

The description of objectives statements as being "plotted" on an outcome category system oversimplifies what was a more complicated, and less precise, process. A more accurate description of what happened would be that the author and his collaborators entered into the accumulated stack of guidelines with the orienting questions and outcome categories in the back of their heads, serving as selective attention guides and an interpretive framework respectively. After a certain amount of reading had been done, and particularly when all the objectives statements had been gone over once, tentative notions formed as to what the answers to the orienting questions

might be. This led to a re-examination of the specific parts of the documents, and in some instances, formal attempts to plot parts of the guideline on the outcome category system.

Main Results

What follows are summary statements of the author's answers to each of the questions posed. The numbers correspond to those of the original list of "orienting" questions.

The Context of Aims/Objectives Definitions

1. (a) Three major types of guideline material that are relevant to a study of the scope of aims and objectives could be designated "image-linked" (referring to a conception of the educated person, the learner, and the discipline); "practical framework-linked" (that can be used as the basis of lesson planning); and "reflective" (material linking the first two categories, notably, aims/objectives; evaluation; and implementation statements).

   (b) Only two major Ministry statements of goals that could be said to be linked to an image of the educated person were made during the period in question; the first was made in 1937 and remained the official set of aims until 1973; the second goal statement appeared in 1973 and appeared in revised form in 1975. Since a verbal account of the image of the educated person appears together with a first statement of goals, these two components tend to be inseparable in practice and must be studied together in defining the "breadth" of the organizing framework for aims and objectives.

(c) Conceptions of the learner have occurred along three dimensions: (i) the basic learning model, (ii) the domain over which development has been conceptualized, and (iii) the nature and treatment of individual differences. Dimension (ii) has implications for an aims/objectives study because of the categories of outcomes it designates, while (i) relates to the organizing sets of objectives employed, particularly in the skills area.

(d) At least partial conceptions of the discipline have begun to appear in recent guidelines; these have implications for an aims/objectives study in those instances, notably English and Science, where students are expected to comprehend "knowledge about the discipline".

(e) There was considerable variation over the period in question in the quantity and nature of "practical framework linked" material. Items appearing in such material speak with varying degrees of explicitness to intended aims and objectives, and so must be considered in an aims/objectives study.

Trends in Aims/Objectives Formulation

2. (a) At the beginning of the period under study, reference to aims and objectives in Ministry guidelines was confined to statements of general purpose in the K-6 guidelines as well as in secondary Mathematics and English, and was very limited in most other Intermediate grade subjects (Social Studies being the exception).

(b) Although change has been uneven, and there remain significant differences between Intermediate and pre-Intermediate level guidelines (as well as among guidelines of Intermediate level

subjects), most current guidelines contain two and in some instances three sets of objectives applying to the work of a particular course. A teacher planning a unit might find as many as five distinct sets of Ministry-approved aims and objectives that could be construed as pertaining to the outcomes of that unit.

(c) The proliferation of objectives lists has not been accompanied by any visible increase in the precision with which objectives of different types are differentiated. More generally, knowledge of the underlying model of the learner is frequently required if the guideline reader is to reconstruct the intended meaning for vaguely formulated objectives statements.

(d) It would appear that the writers of guideline objectives do not have criterial definitions for many of the outcome categories intended, and that attempts to perform logical operations on sets of objectives fail on that account.

Trends in Breadth and Emphasis

3. (a) While the term "breadth of proposed aims" is difficult to define in a precise way, one can make a rough (ordinal) comparison of delineated breadth by considering the number of cells exemplified in an "outcome categories" X "contents" matrix. This "measure" can be made at any number of levels of aims/objectives definition.

(b) The 1937 statement of general goals took the principal function of the school to be that of preparing the individual for participation in a democratic society whose way of life is

founded on Christian principles. The 1975 statement did not provide a one-sentence statement of the overriding goal for public education, but instead declared that:

(i) "it is the policy of the government of Ontario that every child be granted the opportunity to develop as completely as possible in keeping with his or her talents";

(ii) in pursuing their responsibilities under this policy, schools were to keep in mind the necessity for the continued development of society, of individuals accepting a minimal set of common values.

Although the 1937 statement has been acclaimed for its "enlightened" and "educationally advanced" viewpoint, its successor appears to offer even greater potential breadth in that it contains fewer restrictions on desirable outcomes. The 1975 statement also appears to have at least marginally greater delineated breadth.

(c) There were significant differences in relative emphases between the 1975 and 1937 statements, of which the following two are most evident:

(i) The 1975 statement puts more emphasis on complex intellectual skills, as opposed to the traditional "literacy" skills, and their application to more diverse contexts.

(ii) The 1975 statement shows a heavier preponderance of self-oriented outcomes (self-selected values, self-knowledge, self-evaluation and improvement skills and traits; positive feelings about self) and a lower preponderance of "other" or "societal" oriented outcomes, than did the 1937 formulation.

The 1975 statement is consistent with an image (conception) of the educated person as an individual who is intelligently self-directed in the significant contexts of his everyday life (i.e., who is capable of solving problems of personal concern, guided by a set of values which, apart from a minimal set "essential to the continuing development of society", is essentially self-chosen.

(d) From an analysis of trends in the core subject areas, it was concluded that the inferred 1975 image is consistent with a long-term increase in expectations for complex intellectual and affective functioning, in a wide variety of more highly conceptualized contexts.

The Breadth and Stability of Current Conceptions of Aims and Objectives

4. (a) Although there has been concern that forces behind the "back-to-the-basics" rhetoric might force a narrowing of the domain in which educational aims and objectives are formulated, evidence from the current round of Intermediate guidelines is that this has not happened; instead, (i) the so-called "core" or "mandatory" objectives have been becoming broader in scope as each new Intermediate guideline appears, (ii) emerging implementation plans require Boards to go beyond the core objectives to deal with general aims for the subject areas and/or the division in question.

(b) The trends evident in aims/objectives statements reflect a deeply rooted conception of the educated person that is not likely to "narrow" in the foreseeable future.

Implications of the Present Study

5. (a) In view of the hypothesized generative process for aims and objectives, there are substantial grounds for concern about proposed projects that take guideline objectives statements as complete sets of self-justified givens. Statements of aims and objectives need to be interpreted by (i) recovering the framework from which they were generated, or (ii) when (i) is not possible, by constructing a framework that gives them consistent meanings.

(b) A method for improving guideline aims and objectives writing can be proposed which involves the progressive (top-down) delineation of intended outcomes in a three-stage process of definition.

(c) Any significant acceleration of progress toward the realization of the widely shared image of the educated person will require (i) substantial teacher re-training in the procedural basis of complex intellectual performance, and (ii) the provision of more intense teacher-student interaction. Both requirements have implications for desirable teacher-student ratios, and for the general deployment of teachers.

B: THE OUTCOME CATEGORY SYSTEM

Origin: Focus on Individual Outcomes

Almost a decade ago, the author became involved in the Major Thrust in Elementary School Thinking, a large project for developing curriculum materials with a "thinking" emphasis. Each curriculum package or unit centered around a particular outcome (e.g., problem solving, measurement, critical thinking) which had an articulated and consistently applied meaning throughout the program. Consequently, as the materials accumulated, their authors were forced to begin to sort out relationships between the different outcomes to which these materials were addressed; for example, over a period of three years there emerged the notion of a hierarchy of skill types designated (in this system) "primitive", "simple", and "complex". At the time, however, little thought was given to the relationship of such skills to behavior in the affective and psychomotor domains.

Initial Impetus to Create a System

Pressure to examine such relationships, and to build a more comprehensive outcome category system, came about five years later (1973-74) when the present author began to work with local curriculum committees who were developing new programs in such fields as environmental studies and moral reasoning. A major early requirement of such committees was an outcome category system comprehensive enough to bring some sense of order into an otherwise incoherent mass of specific objectives for a particular course. Another pressure was to devise a system that could be used in all or most subject matter fields; failing this, a grade 8 teacher might be faced (and

indeed very frequently was faced) with as many as six different systems for organizing the objectives she was trying to achieve in her total program.

Although the author was familiar with the well known Bloom and Krathwohl taxonomies, having used them both in graduate level teaching and academic writing, they did not appear to be adequate for local curriculum work. Minor quibbles aside, our chief reservation stemmed from the belief that no single domain category system could do justice to current conceptions of human behavior. This point was brought home with some force by contemporary writing on affect, where the main effort of the past decade has been to reformulate traditional views of the relationship between cognition and affect in general, and to relate specific facets of affective behavior (e.g., believing) to specific categories of knowledge (e.g., propositional knowledge) in particular. In a similar vein, the so-called psychomotor skills share with intellectual skills a dependence on "know how", so that the isolated treatment of a psychomotor taxonomy (a common practice among physical education writers) tends to down-play and misrepresent the procedural basis of most kinds of educable motor skills.

Articulation and Preliminary Trial of the Strategy

These initial exploratory efforts to construct an outcome category system were intensified in 1976-77 in the initial courses of the Experimental M.Ed. Program in Curriculum Consultancy, developed jointly by the staffs of Northeastern Centre, Niagara Centre, and Brock University. In the northern segment of the program in particular, the students were almost all subject matter specialists (department heads and vice-principals with interdisciplinary responsibilities), who came into the course with a long history of frustration

in their attempts to communicate with each other about their (presumably) common objectives. In addition to the need to develop a vehicle for communication, it soon became clear that the definition of procedures for dealing with particular kinds of outcomes required a shared understanding of the nature and interrelationship of these outcomes. For example, little headway could be made in devising procedures for teaching propositional knowledge until teachers recognized the many linguistic variants they employed (ideas, principles, laws, understandings, notions) in their respective disciplines to describe such knowledge, and had distinguished the teaching of propositional knowledge from the teaching of individual concepts (for which a different procedure is required).

Forewarned by this time of the dangers of "top-down" curriculum development--which includes the attempted imposition of constructs which make little sense to users--the authors reverted to a teaching stance and developed a "strategy" (procedure, set of steps to be followed) by which graduate students could develop their own system. Based essentially on the authors' introspective analysis of their own attempts to come to grips with outcomes, the strategy comprised four main stages as follows:

(1) Defining the primary domains for describing educable qualities, a phase which draws primarily upon the teacher's "image of the educated person";

(2) Creating a hierarchy of categories within each domain, a phase which draws in part upon the teacher's conception of his own discipline, and in part upon his model of the learner;

(3) Developing dynamic interrelationships between categories and subcategories, a phase governed largely by one's model of the learner;

(4) Developing "context" dimensions, for which one has again to draw on the "image of the educated person".

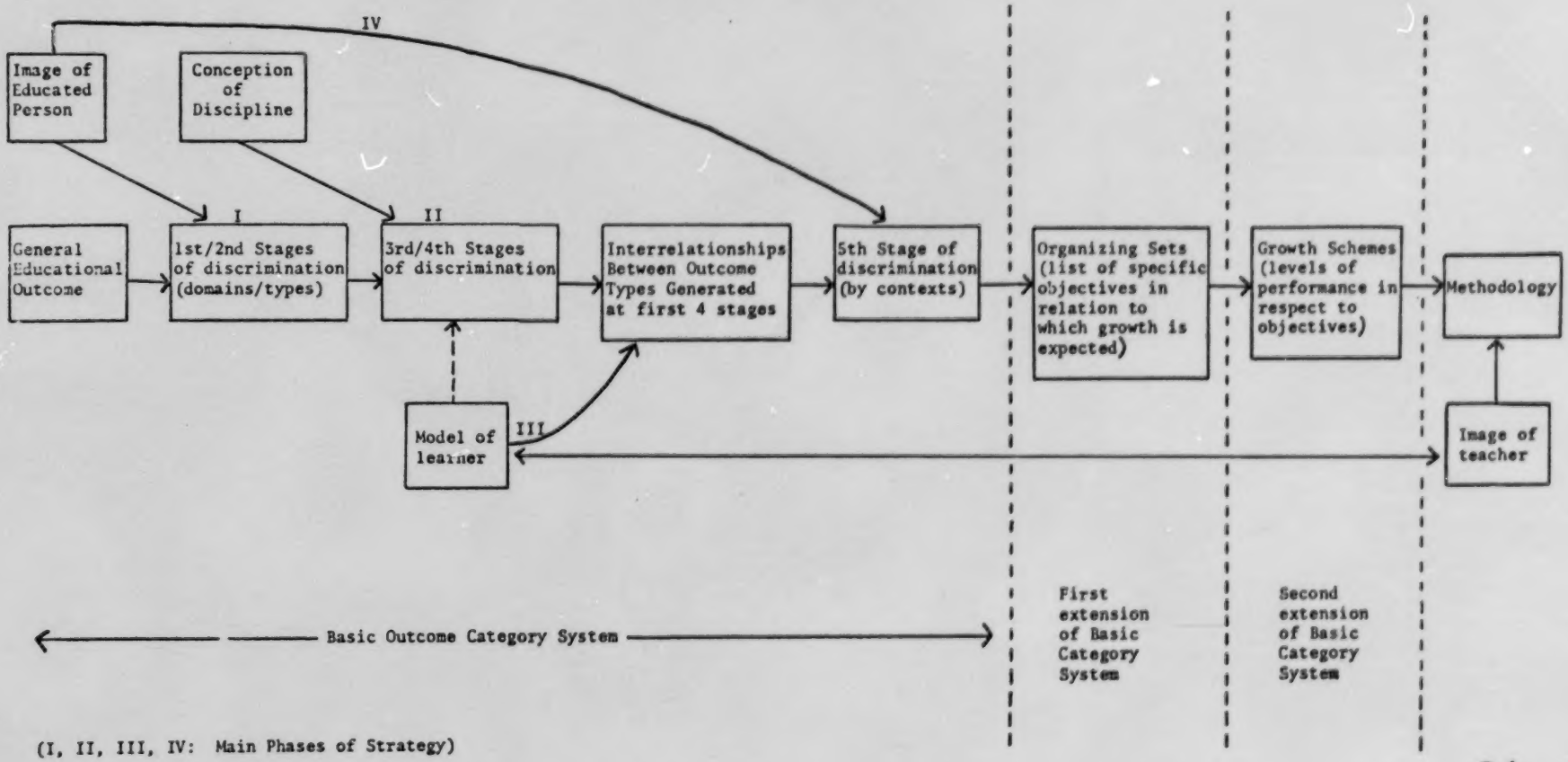
The steps in the execution of the strategy, and the input at each stage from presumed images, is depicted schematically in Figure 1.

The strategy itself, along with the author's reflections on the responses each instruction prompted from him, is available in a separate publication (7-24).

During the winter and spring of 1976-77 this strategy was used as an agenda in working with a range of subject specialist groups. The exact mode of interaction with the students cannot be defined simply (it is designated in the ICPOGMU system as "teaching consultancy") but consists essentially of starting with the student's own ideas and wordings, and forcing the latter's accommodation to a more complex structure by presenting instances which the existing structure cannot assimilate at its present stage of development. Thus, for example, if a group of students failed to distinguish "concepts" from "generalizations" in their first run through section III of the strategy, the instructor would give an example of each (e.g., "energy", a concept; "energy may be transformed from one form to another, but is never created or destroyed", a generalization), asking what distinctions the student would make between them (a generalization contains more than one concept).

Apart from such "accommodation pressure", no attempt was made to force the participants into a common scheme, the intention being rather to determine the distinctions different subject matter groups made (whether or not they articulated them) and the language that was natural to them. Consequently, it was both surprising and encouraging to discover that, almost without exception, most subject matter specialists--under pressure

Figure 1: Relationships Between the Strategy Phases, Related Images and Stages of Discrimination in the Basic Outcome Category System


IV
Image of Educated Person
Conception of Discipline
I
II
General Educational Outcome
1st/2nd Stages of discrimination (domains/types)
3rd/4th Stages of discrimination
Interrelationships Between Outcome Types Generated at first 4 stages
5th Stage of discrimination (by contexts)
Organizing Sets (list of specific objectives in relation to which growth is expected)
Growth Schemes (levels of performance in respect to objectives)
Methodology
Model of learner
III
Image of teacher
Basic Outcome Category System
First extension of Basic Category System
Second extension of Basic Category System

(I, II, III, IV: Main Phases of Strategy)

to accommodate their existing classification schemes to encompass the distinctions they are capable of making--converge in their thinking to relatively minor variants of a common outcome category system. This commonality can be attributed, in the author's opinion, to such things as a widely shared image of what it means to be educated, a common view of the knowledge categories, essentially those proposed by Bloom and his associates (not a surprising result, in view of the interdisciplinary nature of the team that constructed the taxonomy), and a common (information processing) model of the learner. On the latter point, most teachers today have internalized an information processing or cognitive psychology model. Whatever the case in academic psychology, few teachers today are avowed philosophical behaviorists, and there is no significant resistance to such "mentalistic" terms as "awareness", "images", and "beliefs".

Current Work with the Strategy

Further applications of the strategy were made in 1977-78. In one significant type of application, it was shown that the more advanced graduate students could use the procedure themselves to get local curriculum groups to develop their own outcome category systems. While the products of such interactions varied with the sophistication of the students and teachers involved, the resulting systems were in every instance recognized as being considerably more complex (made many more consistent discriminations) than whatever scheme the group had previously used to organize its objectives.

A second significant application in this period occurred with the release of the new Intermediate guidelines. Between September and December of 1977, students who were familiar with the more highly developed outcome

category system that had resulted from the use of the strategy, and who at the same time were involved in guideline implementation in a particular subject area, used such a system to describe the "minimal retrievable outcome category system for mandatory guideline objectives" presented by the guideline. The fact that it was possible for a group of subject specialists to reach consensus in such diverse disciplines as mathematics, history, geography and English provided evidence that the system was complex enough to include discriminations made in current Ministry guidelines.

In a third project, a group of high school heads who were familiar with the outcome category system generated by the strategy began to use it as a vehicle for developing a common approach to objectives in a large high school. Although the project has not proceeded to the point of course revision at the time of writing, the discussion of a common outcome category system has been a central part of the staff's plan for self-directed in-service education, and even at this stage has generated interest in looking collectively at ways of dealing with particular outcomes (e.g., the teaching and testing of concepts).

Progressive Emergence of "the Outcome Category System"

Each new round of applications brought further insight into both the potential usefulness of the strategy and the degree of variation in the resulting outcome category systems. From the outset, we have made a conscious effort to incorporate important new distinctions into (what we have come to refer to as) "the ICPOGMU System", which might be defined (loosely) as the most comprehensive outcome category system produced to date by application of the strategy.

Thus, perceptions of weakness, together with insight from the theoretical literature, have led to progressive modification of the system. As an instance of the latter, our rereading of current analytical writings on the concept of attitude convinced us that our earlier treatment of the affect outcome should be augmented to incorporate attitudes that result from complex "summary evaluations", which have as their basis a substantial amount of propositional and empirical data.

The upshot of the foregoing is that it is not possible to state a final form of "the" outcome category system, nor do we expect it will ever be possible to do so. It is probably no exaggeration to say that a fully articulated category system would contain just about all the discriminations a person is able to make in relation to educational phenomena, and there is no reason to believe that this process of conceptual refinement should terminate at some point.

The Structure of the Existing ICPOGMU Outcome Category System

The Basic System

The structure of the basic outcome category system is shown in Figure 2. Essentially it is a multi-stage classification scheme that makes increasingly finer discriminations within the current overriding educational outcome: to develop student potential to the fullest possible degree. Thus, at the first stage of discrimination, outcomes are differentiated by the three familiar "domains": the cognitive, affective, and psychomotor. At the second stage, the cognitive domain is divided into knowledge and skill and the affective domain into primary and secondary affect.

Figure 2: A Basic Outcome Category System for Local Curriculum Projects

UNIVERSAL	I (DOMAIN)	II	III	IV	V CONTEXTS
OVERRIDING EDUCATIONAL OUTCOME (DEVELOP STUDENT POTENTIAL TO FULLEST POSSIBLE DEGREE	COGNITIVE	KNOWLEDGE	KNOWING THAT	SPECIFICS CONCEPTS/CONSTRUCTS CONCEPT SETS GENERALIZATIONS THEORIES SYSTEMS	X (BY CONTEXTS)
			KNOWING HOW TO (KNOWLEDGE OF PROCEDURE)	UNARTICULATABLE UNARTICULATED (BUT UNARTICULATABLE) ARTICULATED	X (BY CONTEXTS)
		SKILL	BEING ABLE TO	PRIMITIVE SIMPLE COMPLEX HYPERCOMPLEX	X (BY CONTEXTS)
	AFFECTIVE	PRIMARY	KNOWING THAT LINKED AFFECT	FEELINGS ATTITUDES I BELIEFS ATTITUDES II VALUES	X (BY CONTEXTS)
			KNOWING HOW TO LINKED AFFECT	(NO NAME)	
			BEING ABLE TO LINKED AFFECT	(NO NAME)	
		SECONDARY	GENERATED BY COGNITIVE ACTION ON PRIMARY AFFECT		
	PSYCHOMOTOR			PRIMITIVE SIMPLE COMPLEX	X (BY CONTEXTS)

At the third stage, knowledge is differentiated into knowing that and knowing how to (knowledge of procedure), while skill is construed as being able to. Each subtype of cognitive activity is postulated to have a linked affective state (primary affect), while intentional cognitive reflection on affective states is presumed to generate secondary affect.

At the fourth stage, knowing that is subdivided into categories of increasing complexity, a subdivision that uses language found in the Bloom taxonomy. Procedures are thought to be of three kinds: those that are incapable of being articulated, those that are articulatable but not yet articulated, and those that are already articulated. Both intellectual and psychomotor skills are thought to range through primitive (having no articulatable know how), simple (a synthesis of primitive skills having an articulatable know how), complex (a synthesis of simple skills having an articulatable know how), hypercomplex (a synthesis of complex skills having an articulatable know how), and so on. It is assumed that the subsumption of broader and broader pieces of intellectual activity under identifiable procedures can be continued for several more stages; the execution of most of the ICPOGMU strategies, for example, would require what might well be designated "hyper-hyper-complex skills" since it would require what we have termed a "third order strategy" to reduce the steps involved to the level of "ordinary" complex intellectual performance (e.g., to a set of single matrix decisions).

The traditional guideline affective objectives (e.g., attitudes, beliefs, and values) are considered to be instances of knowing that-linked affect in that each is assumed to result from the activation (bringing into awareness) of a particular knowing that subcomponent (e.g., bringing into awareness the

meaning of a proposition is assumed to bring into awareness the affective state designated "a belief").

At the fifth stage of discrimination it is suggested that each separate outcome emerging from the fourth stage be considered in relation to a set of "contexts" (so we would have, in effect, a logical multiplication of contexts with the subcategories developed by the fourth level of discrimination). These contexts are derived from one's image of the educated person, being in fact the significant contexts of his lived experience. In our work with teachers, it has not been possible to derive one set of contexts that is completely compatible with the images of every local curriculum group, a situation that is also reflected in the theoretical literature. However, to give some examples, contexts that are common to many such lists are "the physical environment", "the self", "the intimate group", "society", "work", "culture", "the supernatural", and so on.

The expression "the context in which the outcome occurs" turns out to have different meanings for knowledge, skills, and affective subcategories respectively. For the latter, contexts may be said to be the "object" of an affective outcome, for example, the object of an attitude, belief, or feeling. For a skill, context is the perceptually available environment in which skill is to be executed. For knowledge, the context can be either the perceptually available environment in which knowledge is to be exhibited (as for skill), or the "content" of the knowledge.

Context dimensions can be subdivided and combined to form a multi-stage system in their own right. Thus one can have beliefs about individuals and about society, or one can have beliefs about the appropriate relationship between the individual and society. Insofar as knowledge is concerned, these

various subdivisions and combinations of "contexts" define the principal subject matter groupings of the school.

The Extended System

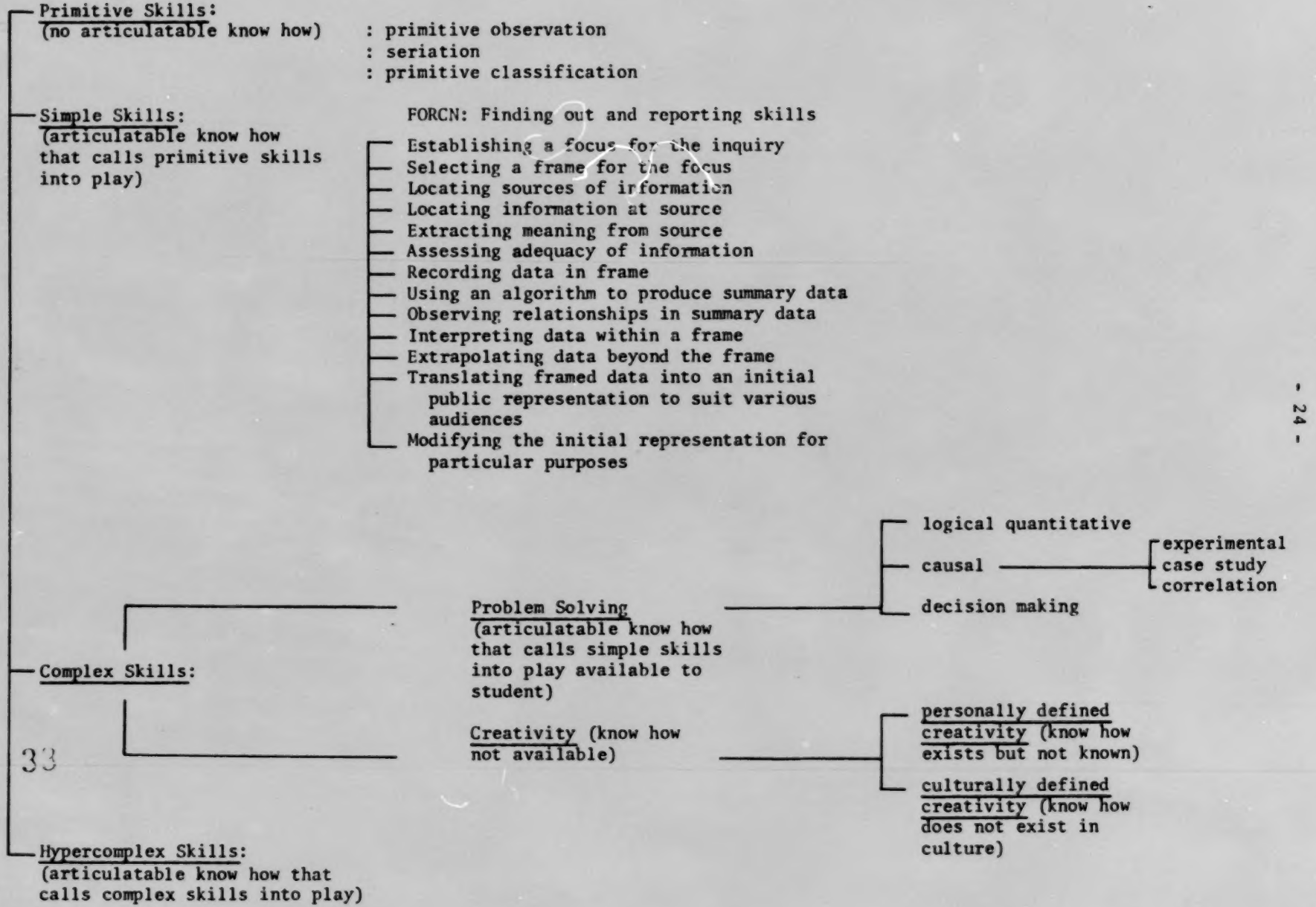
The fifth stage of discrimination completes what we have designated to be the basic outcome category system (the one generated by the strategy). At this point, however, outcomes are still stated too broadly to be of direct use in designing sequences of instructional objectives. The two additional steps needed to develop such a programmable set of objectives are:

(a) developing what we have termed "organizing sets" for each outcome subtype identified at the fourth stage of discrimination (an organizing set for a particular outcome category is the minimal set from which all instances or the outcome type could be derived as special cases or combinations) and

(b) particularizing sets of generally stated objectives for use in specific disciplines (i.e., contexts).

These two steps are not accomplished in the same order for skills as they are for knowledge and affect (i.e., they do not constitute a set of specific objectives that one would program or devise a sequence of "levels" for). Our approach with intellectual skills has been to develop an organizing set by accumulating components uncovered by analysis of exemplars from the various contexts (disciplines). The most comprehensive effort of that kind is the so-called FORCN list of simple skills depicted in Figure 3. To get the complete list of simple skills in need of "levelling", one would read off all the context variants of these FORCN skills.

Figure 3: An "Organizer" for Skill Outcomes


Primitive Skills:
(no articulatable know how)
: primitive observation
: seriation
: primitive classification
Simple Skills:
(articulatable know how that calls primitive skills into play)
FORCN: Finding out and reporting skills
Establishing a focus for the inquiry
Selecting a frame for the focus
Locating sources of information
Locating information at source
Extracting meaning from source
Assessing adequacy of information
Recording data in frame
Using an algorithm to produce summary data
Observing relationships in summary data
Interpreting data within a frame
Extrapolating data beyond the frame
Translating framed data into an initial public representation to suit various audiences
Modifying the initial representation for particular purposes
Complex Skills:
Problem Solving (articulatable know how that calls simple skills into play available to student)
logical quantitative
causal
experimental
case study
correlation
decision making
Creativity (know how not available)
personally defined creativity (know how exists but not known)
culturally defined creativity (know how does not exist in culture)
Hypercomplex Skills:
(articulatable know how that calls complex skills into play)

Developing a list of specific knowledge components for programming (levelling) has turned out to be much more complicated, and tends to work in the reverse order. First, a list of knowledge components of a given type (e.g., concepts) is determined by examining the content (e.g., "central concepts") of disciplines that deal with each context subvariant. These components are then analyzed into their common elements, and the resulting set is both an organizer and the list employed for programming (levelling).

One could add further stages of discrimination and would do so, depending on one's purpose. For example, in defining a course or sequence of lessons that dealt with a particular objective (e.g., graphing numerical data), the teacher or program developer would try to specify the level of skill required at various points, so that producing levels introduces a further stage of discrimination. Similarly, the person who wanted to design test items would be concerned not only with the level of performance expected in respect to a particular outcome, but with the circumstances (testing details) in which this level is to be exhibited. For most complex forms of outcomes, such descriptions are multi-dimensional, so that several more stages of discrimination could be envisaged.

Similarly, an attempt to classify "specifics" would involve a potentially infinite sequence of discriminations (by more particularized contexts) as illustrated in the following hypothetical (and somewhat facetious) sequence:

houses--→ houses in central Quebec--→ houses in eighteenth century Quebec--→ houses of the protestant merchant class in eighteenth century Quebec--→

Each item in the sequence is a concept whose name designates a class of things of lower order of generality than its preceding. Of these items, houses (or

homes) is likely to appear as a member of an organizing set of sociological concepts (e.g., in Junior grade social science), while "bird houses" is likely to appear as a "topic". (The concept "bird houses of the Protestant merchant class of eighteenth century Quebec" sounds like the topic of a doctoral thesis!)

In the ICPOGMU system, the primary category system is developed by applying one strategy, the results of which are further differentiated by a procedure for defining organizing sets, and the particular variants of organizing sets are then "levelled" by using yet another set of procedures. It would be true to say, then, that the degree of discrimination provided by the ICPOGMU system at any time would be determined by what the user was able to produce by the application of these three strategies in sequence, by the degree of his ability to use the products of the application of these strategies.

C: GUIDELINE COMPONENTS THAT DEAL WITH AIMS AND OBJECTIVES

The original intent of the study, as indicated in its title and detailed prospectus, was to examine explicit statements of aims and objectives with a view to determining trends over a twenty-five year period. However, on reworking and reflecting on the structure and application of the category system, we were reminded that in practice, statements of objectives are linked to "images" on one side, and to the "practical" (lesson specific) advice offered to teachers on the other. And while a sophisticated guideline writer might be expected to attempt to separate these components, we had every reason to expect a substantial amount of overlap in practice.

Thus, in order to better define the domain of the search for aims and objectives statements, it was necessary to make a preliminary study of the content of these three particular components of guidelines, and of the implications of the way they have been dealt with for a study of the scope of aims and objectives. After examining the documents listed in the Bibliography, we concluded that the three components of the documents in which we were interested could be most productively elaborated--for the purposes of identifying variations in treatment--as follows:

(I) statements referring to "images", including, notably:

  (a) an image of the educated person, and of the society in which he is to live (which were not separable in practice);

  (b) a conception of a discipline or area of study, dealing with either (i) the nature of the studies of that area, or (ii) the contributions of that study to the desirable qualities of the educated person;

(c) an image of the learner, embodying (i) a conception of human nature, (ii) a conception of the dynamics of learning (model), (iii) a conception of development, and (iv) a conception of individual differences.

(II) material relating directly to the practical frameworks in which teachers plan and execute a course and individual lessons. This can involve a whole range of components, such as: (a) content or topics to be covered, defined at various levels of specificity; (b) proposed pupil activities; (c) proposed teacher activities; (d) suggestions for the management of large groups and the deployment of space and time; (e) suggestions regarding grading, testing and reporting.

(III) "reflective" (non-planning frameworks) statements, which link (I) and (II), paramount among them being statements regarding (a) objectives, (b) evaluation of teachers and techniques, and (c) implementation plans.

In the pages that follow we will deal with the components of (I) and (II), leaving that part of (III) that deals with frequency and sophistication of objectives statements to a separate section.

Image of the Educated Person and of the Ideal Society

Only two major Ministry statements of goals that could be said to be linked to an image of the educated person and the ideal society were made during the period in question. The first appeared in 1937 and remained the official set of aims until 1973; the second goal statement was made in 1973, and re-appeared in revised form in 1975.

The "Gray Book" (1937) stands apart from all other Ministry guidelines in respect to the explicitness of its formulation of a view of the desirable society (a democratic society that bases its way of life upon the Christian ideal), and of the linked qualities of the educated person. It then proceeds from this basis to describe the central goals of education, organizing them under "The School's Threefold Task" (4-1, p.6). No doubt it was the explicitness and conciseness of this statement that prompted the authors of Living and Learning to declare the "Gray Book" to be "the only official publication of the Department of Education which deals with aims deliberately and fully" (6-12, p.70).

By the early 70's, it was evidently no longer possible to say with any degree of certainty what a society should be; the only descriptors of what it is use the terms "changing" and (by implication) "multicultural".* What Education in the Primary and Junior Divisions does contain, as does the companion (but as yet unpublished) General Guideline for the Intermediate Division (1974), is a detailed set of descriptors of the educated person, organized first under three, then under four separate categories as "goals" (1973), or outcomes for which the curriculum should provide "opportunities" for development (1975). This list (Appendix A), which first appeared in New Dimensions in 1973, is of particular significance because it represents the most recent Ministry attempt to formulate a general set of aims for public education in Ontario, and its inclusion in a number of Ministry documents since

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*Perhaps it might be argued that this statement makes an indirect reference to the nature of the desirable society when it states that such "values" as respect for the individual, concern for others, the concept of social responsibility, and the acceptance of work, thought and learning as values pursuits for human beings, are "essential to the continuing development of our society".

that time would lead one to believe that it must now be considered the "official" set of aims.

Obviously the two statements, which present the overall framework for aims and objectives in their respective periods, will be pivotal in our study of the breadth of aims and objectives. Another implication of the foregoing is that since the statement of the image of the educated person, of the ideal society, and of the overarching goals of education tended to be inextricably linked in these expositions, our first analysis of the breadth of educational aims and objectives must treat them together.

Conception of the Learner

As indicated in the preamble, the treatment of the image of the learner can be discussed under: the underlying conception of human nature; the conception of the dynamics of learning; the conception of development; and the conception of individual differences.

As for the first component, guidelines express their conceptions of human nature implicitly rather than explicitly. In a section on "Activity, Interest, and Social Participation" (6-1, p.8), the "Gray Book" cites three propositions for optimal conditions for learning ("we learn by doing"; learning takes place most efficiently when the interest of the learner is aroused"; and the "development of the individual takes place largely through social participation"); these three positions suggest that the underlying conception of human nature is very close to what Bigge (6-4) has described as the "active" view of human nature* (i.e., the view that the learner may be

*As is indicated in Part E, however, the 1937 view seemed to have receptive elements in its conception of affective outcomes.

regarded as an intention-forming creature who acts outward on his environment).

A view on the second of Bigge's dimensions (moral nature) is implied in a later section on "Learning Through Purposeful Activity" (6-4, p.16 in which it is argued that children's self-chosen activities have the desirable qualities of being objective, immediate, and accessible. In other words, children are of such a nature ("good") that we can trust their natural inclinations in a learning context.

We must remember here that we are dealing with notions whose authors "were far in advance of most teachers and laymen of their time" (Living and Learning, p.70), so it is not surprising that those of us who were both in school and taught school during the period in which this conception was in operation will find little connection between its sentiments and what actually went on either when the statement was formulated or as late as the early 1950's.

By way of comparison, there can be no doubt that the authors of Education in the Primary and Junior Divisions accepted the good-active view of the learner almost without qualification (pp.3-4). In fact, the stress on curiosity, the value of play activity, and the need for children to have free access to the total learning space--all of which appeared in the revisions of the primary and junior documents that began in 1967 and were reiterated in EPJD, together with the "open" programs in which children spent a substantial amount of their time in self-chosen activities--have led many people to believe that the early 1970's represented a high point in the good-active philosophy (7-4, p.6).

Turning now to conceptions of development, guideline accounts in the early 1950's seemed to be limited to physical (growth and muscular coordination) and sociological aspects, the latter represented by the following type of statement that is normally associated with the "unfolding" views of Gessell and Ilg:

> This is the period when the gang or club is all important--the nine to eleven-year-old feels that he must conform to the group pattern--a sense of loyalty to its members is very strong and he has a great need of their approval. (5-6, p.2)

By the late 1960's and early 1970's the influence of the school of developmental psychology initiated by Piaget was beginning to be felt in guidelines. These conceptions were applied not only to the child's physical development, but to:

(a) his intellectual development:

> An understanding of concrete relationships (near-far, inside-outside, before-after, cause-effect) may be within the grasp of a seven-year-old child, but appropriate experiences are needed to deepen such understandings and expand them for wider application; (7-3, p.13)

(b) his social psychological development, now conceived in rather different terms:

> By the age of six, children can sympathize with the feelings of others, but only gradually do they learn to see situations from another's point of view. Children may reach the end of the Junior Division before they can fully imagine themselves in another position; (7-3, p.13)

(c) his moral development:

> Even in moral and ethical understanding, children appear to move through stages. The five-year-old has concrete ideas of behavior and punishment related to specific situations. Rules are imagined as always being made by others. (7-3, p.14)

The influence of developmental psychology on guideline writing has continued into the new round of Intermediate guidelines. Both the History (7-9, p.4) and the Mathematics (7-14, p.1) guidelines contain explicit references to general adolescent intellectual and interpersonal characteristics, while the English document adds to these several sections dealing with the implications of stage-developmental theory for language usage and teaching (7-7, pp.14-16; 28-34; 39-46; 58).

Turning next to basic (underlying) learning models, the guidelines in use in the 1950's make no explicit reference to learning theory, and one would have to turn to the professional literature of the time to see what views were held in different subject areas. As far as mathematics was concerned, for example, the period between 1930 and 1950 was characterized by a sea-saw battle between the exponents of Thorndike psychology (a primitive form of behaviorism), and the Gestalt emphasis introduced into education by Wertheimer and others. Elements of both of these views of learning are in evidence in the 1950 documents. (The term "habits" has the ring of "habit strength", while the notion of "meaningfulness" is generally credited to the Gestalt school.)

EPJD makes explicit reference to learning theory under a section designated Research (7-3, p.10) in which two major "emphases" are described in the field of educational research, "one centred on behaviorist, the other on cognitive field-development theories". Although the document does not declare its preference, it does say that:

> A cognitive explanation is more appropriate in dealing with the complex behaviors of such communication, concept-formation, and problem solving. (7-3, p.10)

In view of the types of objectives found in EPJD, it must be concluded that the "cognitive" theory was thought to be more generally applicable.

Despite the views expressed in EPJD, and as we have indicated in Part B, the views of most guidelines and teachers today appear consistent with what is more appropriately deemed an "information processing" model of the sort that underlies most of the contemporary conceptions of reading and problem solving. In view of what has been reported in earlier sections on guideline views of human nature and development, it might be said that the guideline learner is a creature who actively seeks information about his environment that will enable him to assimilate that environment to his existing cognitive structure, a structure that evolves (by accommodation) into progressively more complex forms when faced with unassimilatable information.

We now examine as the final component of the image of the learner, reflected in the views advanced on the nature of, and remedies for, individual differences. Although documents of the 1960's describe differences in students in terms of "physical makeup, talent, social background, emotional disposition, outlook, tastes, and ambitions", the chief pedagogical implications envisaged seemed to lie in the "rate at which they learn" (6-1, p.9), and the main way of accommodating individual differences in having children progress "at a rate that is natural to them".

The guidelines of the late 60's and early 70's added to the conception of natural differences in rate of learning, considerations of special learning difficulties (7-3, pp.40-41) as well as the broader set of dimensions in which children's growth is to be conceptualized that was discussed above because of this wider view that proposals for dealing with individual differences went far beyond appropriate pacing to involve the student in the selection and evaluation of his own learning activities (7-3, p.24).

The implications of guideline views of the learner for a study of the scope of aims and objectives depends somewhat on the component of the conception under consideration. Obviously, the dimensions in which development is conceived will be reflected, at least in a general way, in any statement of aims that is prefaced by the expression "to develop..." Not quite so evident, though equally important, is the effect of the model of the learner on objective statements. This occurs primarily when organizing conceptions are brought into play; one could anticipate, for example, that an information processing model will generate many statements related to the skills of locating, assessing, tabulating, graphing, interpreting and extrapolating data. Views of the child's nature and of the nature and optimal treatment of individual differences, seem to bear most directly on pedagogy, and so will not be of direct concern to us.

It could be argued that the chief value of determining guideline views of the learner is that they sensitize the guideline analyst to the sorts of objectives statements he is likely to find. Further, it is sometimes the case that knowing something of their origin (hence, of their "context" in some larger sense), is a prerequisite for giving meaning to the somewhat vaguely formulated statements of individual objectives, a point that will appear later to be critical.

If one were now setting out to construct a category system for analyzing guideline objectives, the views of the learner that have been uncovered here would be critical at various points in its development. As it turned out, we had already incorporated into our procedure for developing a category system the necessity of returning to the images of the learner, and of spelling out its implications for such things as the relationship between category types,

and the details of organizing sets. On the latter point, our organizing set for simple skills (Part B) is built explicitly on the contemporary information processing model, and so is well suited to the analysis of guideline skill objectives which also reflect this model.

Conceptions of the Discipline

Little attention was given in the early 1950's to the third "commonplace": the conception of the content or application of the discipline. Both the Grades K-6 and Intermediate guidelines prefaced each discipline or subject area section with a paragraph or two entitled, "The Purpose of _____", or "The Aim of _____". In the Grades K-6 guideline, we find, for example, that:

> the aim of the course in social studies is to help the child understand the nature of the social world in which he lives.... The course aims, also, to develop in the pupil desirable social attitudes. (6-1, p.65)

In the Intermediate guideline we are told that:

> Social studies is the study of man in relation to his environment and to other people....Social studies should help the pupils to understand and improve the democratic life. (5-3, p.58)

Both statements indicate the contribution of the discipline to the development of the qualities encompassed in the image of the educated person; while the Intermediate statement goes further to offer a general definition of the nature of social studies, such an understanding was evidently intended for the teacher in that it did not appear as a "topic" in the course outline.

Treatments of the conception of the discipline since that time have been more substantial, but are unevenly distributed. In the current round of guidelines, for example, the Geography document contains a section entitled

The Nature of Studies in Geography (7-13, pp.40-43), which reflects a dominant current view (Warman's) on what constitute the "central" concepts of the discipline; but again it is not stated directly that students should understand that these concepts have such a status. In the Intermediate English document, on the other hand, we have under the section Stages in the Linguistic Development of Students the contention that adolescents can and should reach a stage of "analytic competence" in which they become capable of understanding descriptive grammars as models of the structures of language. At this stage students are able to reflect on the nature of linguistic study and performance, they can--in the guideline's words--"become capable of paying sustained attention to language about language" (7-7, p.58). (In another idiom we might speak of them as having become capable of entertaining an elementary epistemology of language.)

The Intermediate Science guideline (7-18) appears to have taken the knowledge about _____ (science), as opposed to _____ (science) knowledge, emphasis the furthest. In sections designated "the nature of scientific inquiry" (pp.40-46), "the nature of scientific explanation" (p.47), "models, theories, and conceptual schemes" (pp.57, 64), "the nature of scientific knowledge" (p.58), and "the aims of the scientific enterprise" (p.60), it is proposed that students should be able to do such things as

(a) understand the distinctions between principles and laws, and models and theories (p.64)*;

*It is interesting to note that while the guideline suggests that students should be able to make this distinction, the document itself does not (e.g., "Principle and Laws: These are generalizations derived and established from a large number of related observations. They are based on empirically confirmed relationships" (p.53, underlining ours).

(b) understand the interplay between scientific knowledge, its technological application and societal implications (p.70);

(c) know the characteristics of scientific knowledge (p.58);

(d) understand why and how scientific knowledge has been developed, and why a particular approach to a problem has been adopted (p.69).

Conceptions of the discipline become relevant to a study of the scope of aims and objectives when it is clearly the intent that such conceptions are to be taken as knowledge outcomes for students. In some instances this intention is stated directly; in others it is merely implied; in still others, one suspects that the teacher's knowledge is of concern to the guideline writer. As we shall see, this is but one of several areas where judgments of intent cannot be avoided.

Guideline Statements that Provide Data for the Teacher's "Practical Frameworks"

By the term "practical frameworks", we refer to the intellectual schemes by which teachers plan and execute courses and individual lessons. The present statement on this complex topic will be limited to matters that bear on the general purpose of this study, although the author believes that it warrants considerable further investigation.

A reasonable concern of a guideline analyst concerned with aims and objectives could be framed by the question: to what extent, if any, did the "Gray Book's" legendary appeal to teachers have to do with its reference to, or clarification of, the objectives of day-to-day lesson planning?"*

*Although we have no hard statistical data which would document teacher preference for this type of guideline, it is widely believed that this is the case. The author believes that such evidence does (or did) exist in the responses of teachers who were polled on their reactions to the first P1J1 documents (1967-71) by a research group associated with the production of the second P1J1 document (circa 1972). As a member of the advisory group for that committee, the author frequently heard summaries of such responses (the sampling base was never defined); his recollection is that teachers' chief complaint was that the original P1J1 gave too little specific advice, and that it was frequently contrasted negatively with the "Gray Book".

Since it is difficult to discuss such a question without specific examples, representative excerpts from different subject areas are shown in Figure 4. Examination of this material has led the author to several conclusions about the practical advice it offered to teachers; these are listed below so that they may constitute the basis of a trend analysis.

(1) Guideline statements intended to translate directly into the teacher's frameworks for planning and executing courses and individual lessons made up the bulk of the "Gray Book", accounting for approximately 80% of the actual lines of type.

(2) While most of the entries deal with what we would describe today as "topics", the actual statements are of at least four distinct kinds:

(i) a bald statement of the topic (e.g., "story of Simon Fraser"; "addition of two digit numbers, no carrying");

(ii) pupil acvivities in relation to the topic (e.g., "naming the flowers in gardens"; "finding seeds that fly: dandelion, milkweed, maple");

(iii) teacher responsibilities in relation to the topic (e.g., "training in silent reading"; "daily reading (of poetry) by teacher");

(iv) joint pupil-teacher activities in relation to topics (e.g., "building cooperative blackboard paragraphs"; "regular use of a reader").

(3) The topics are detailed to the point that they could serve as the subject of an individual lesson or even of part of a lesson in some instances. In other words, they could at the very least

Figure 4: Excerpts from Programme of Studies for Grades 1 to 6 of the Public and Separate Schools (the "Gray Book") (6-1)

READING

Grade 4

Regular use of a Reader
See Circular 14 for list

Training in oral reading (largely individual)

- Directed toward remedying specific defects

Training in silent reading

- Daily exercises to improve comprehension
  - Oral discussion of passage read
  - Oral answers to questions on the content

Training in special kinds of reading

- To secure detailed information
- To get a general idea of the content

Grade 6

Regular use of an approved Reader
(See Circular 14)

Training in oral reading (largely individual)

- Directed towards remedying specific defects

Training in silent reading --

- Daily exercises to improve comprehension
  - Oral discussion of passage read
  - Oral and written answers to questions on the content

Training in special kinds of reading

- To secure detailed information
- To get a general idea of the content (skimming)
- To make a summary or an outline

PARAGRAPH STUDY

Grade 4

Study of good paragraphs in the Reader and elsewhere

- First sentence, last sentence, middle sentences
  Detection of an irrelevant sentence in a paragraph

Building co-operative blackboard paragraphs

Arranging four or five given sentences in a paragraph form

Noticing the reason for a new paragraph in a story

- Important change in time or place or circumstances

Grade 6

Study of good paragraphs in the Reader and elsewhere

- First sentence, last sentence, middle sentences

Practice in completing paragraphs of four or five sentences

- Given the first sentence and the last
  Given only the first sentence
  Given only the last sentence
  Detection of an irrelevant sentence in a paragraph

Building of co-operative blackboard paragraphs

Arranging four or five given sentences in paragraph form

Noticing the reason for a new paragraph in a story

- Important change in time or place or circumstance

Practice in paragraphing direct narration

ARITHMETIC

Grade 1

The Fundamental Operations

Addition and subtraction facts to 10

Discovered by repeated experience with objects

Counting objects by 2's to 20

Grouping objects (10 or fewer) in 2's

SOCIAL STUDIES

Grade 6

The Lure of the Western Sea

Alexander Mackenzie
Down to the Arctic
Over the Mountains and down to the sea

Story of Simon Fraser

A great map maker--David Thompson

Steffanson in "the friendly Arctic"
Meeting of the Eskimo

R.C.M.P. in the Far North

SCIENCE: WINTER

Grade 4

Examination of snow-flakes
Drawing of snow-flakes
Discussion of effects of frost
A class bird-feeding project
Taking a census of winter birds
January blackboard weather calendar
Recording the position and time of sunrise and sunset
Determining the length of each day for a few days
Measuring and recording the length of the mid-day shadow
Discussion of the sun as the source of heat
Discussion of the sources of heat in our homes
Recognizing the kinds of fuel used in our homes
Examination of a piece of coal
The story of a piece of coal from the mine to the home
How wild animals spend the winter
Discussion of the winter homes of wild animals
Study of animals' methods of conserving body heat
The use of wild animals to man and how we should protect them
Demonstration of the value of woollens as insulators
Discovery of how to wash woollens properly.

Grade 6

Recording the amount of snowfall for January on the blackboard
Calculating the rainfall equal to a heavy fall of snow
Discussion of how snow aids plant life in winter
Discussion of enemies of trees and of forests
Studies of methods of forest protection
Reporting on the value of winter birds
Protecting and attracting winter birds about the school by feeding them
Discussion of how birds are adapted to keep warm in winter
Growing bulbs in soil and water in the classroom
Finding out how a bulb is fitted to bloom so soon after planting
Recognition of common house plants in the home and classroom
Demonstration of how to care for house plants in the classroom
Making diagrams of familiar constellations at 8:00 P.M.
Observations to show that snow melts earlier on south slopes
Study of breathing
Discussion of how germs spread
Explanation of how germs enter the body
Discussion of the methods of avoiding infection
Demonstration of the value of pasteurizing milk.

be taken as the organizing focus for the major framework in which the teacher organizes her daily classroom activities, and in some instances provided significant content for that framework.

(4) Of critical importance to the present study, it is also evident that these "practical" statements speak with different degrees of explicitness to what we would now refer to as "objectives". The statements from the Arithmetic and English guidelines are evidently concerned mainly with skills, and are not significantly different (if we remove the activities/responsibilities elements from the English set) from "skills" lists found in today's guidelines (e.g., the "bullets" of The Formative Years). The statements from the Science and Social Studies guidelines, on the other hand, are considerably more ambiguous in their intents, in that one could imagine several completely different categories of outcomes being associated with any of the topics (e.g., "the story of Simon Fraser"; "seeds that fly"). It might be argued, however, that as worded these statements provided a fairly explicit invitation to deal almost entirely with factual information.

The Intermediate guidelines of the same period gave an equal proportion of space to practical statements. There was a tendency in the latter document, however, to separate the "topic" from "suggestions" for dealing with the topic; often these appeared as separate columns. The Science guideline of that time frequently postulated a series of questions under topics, and gave a procedure for dealing with each question. For example, under the topic "the soil that feeds us" the following orienting question and procedure appear:

Why is air necessary in soil?
: Recall what happens to plants under flooded conditions.
: Pour water on a pot of dry soil. Watch for bubbles to prove that soil contains air.
: Discuss the ways in which gardeners improve the aeration of the soil. (5-3, p.176)

The Social Studies guideline for the same period (5-3) provides a detailed unit analysis by topics, subtopics and suggested procedures corresponding to each subtopic; an entry under Unit III: Two Nations on the Arctic Sea contains the following information:

3. The U.S.S.R. - a people of many nationalities and different cultures.	Contrast the various peoples which comprise the Soviet Union. Discuss the progress made by many of these minority groups in abolition of illiteracy, preservation of culture, and abolition of racial discrimination. Committees bring in reports on a comparison of Canadian and Russian architecture, clothing, literature, education. (5-3, p.123)

Even more than the K-6 document, the detail provided in these "suggestions" goes beyond the central topic of the lesson to outline its main components.

On the surface at least, these examples seem to be more specific in respect to the outcomes or objectives intended. Thus the result of "discussing" ways in which gardeners improve the aeration of the soil would presumably be a type of procedural knowledge; similarly, the "contrast" and "comparison" of groups would presumably yield a fairly complex kind of "specific" knowledge, or possibly a low order generalization. On the other hand, the teacher may well have used either topic as the focus of a student's inquiry, with the intention of developing or enhancing any number of intellectual skills, or attitudes to inquiry, or whatever.

Since this pattern of guideline construction was carried over into the guidelines of the early 60's (there was, in fact, no significant change in the Primary-Junior guideline), it was perhaps to be expected that topic specificity had become the norm against which the Ministry's controversial guidelines of the late 60's and early 70's were assessed by teachers. Constructed at a time when official Ministry curriculum policy stated that it was the responsibility of the individual school staffs to devise curriculum within the "common framework of goals" provided by the Ministry, these guidelines backed far away from the details of lesson planning. They offered teachers, instead, such things as: views of child/adolescent development; general advice on course and unit design; advice on the appropriate utilization of time and space in the classroom; and advice on appropriate evaluation and promotion practices.*

Since the Intermediate guidelines were prepared later than their Primary-Junior counterparts, they contained even less specific advice, and the detailed topic breakdown (and related suggestions) of the 1950's/1960's were replaced by suggestions for possible broad units of work. The English Intermediate guideline published in 1969 (6-13) is widely considered by teachers as some kind of monument to non-direction. More than half the space in its sixteen pages is taken up by photographs and samples of student writing; as for the rest, a section entitled "The Program" represents (essentially) a research documented argument <u>against</u> the teaching of grammar, while the section "Principles and Practices" offers the teacher one paragraph each on the topics

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*As one might expect, there was considerable variation between subjects, and the Primary-Junior language arts and mathematics sections did present <u>skills</u> lists, with some general indication (the dotted line graph) of <u>when formal</u> instruction should be given in relation to these skills.

Figure 5: Excerpt from Science, Intermediate Division, Draft Copy, 1978

E18.2: Saturated and unsaturated solutions

A saturated solution contains all the solute it can dissolve at a given temperature. An unsaturated solution contains less solute than it can dissolve at a given temperature. Students should be able to relate these terms to actual experiences, such as dissolving various amounts of sugar in water, as in coffee or tea. Students should have the opportunity to investigate the crystal formation that occurs when the solvent is allowed to evaporate from a saturated solution.

Suggested terminology: saturated, unsaturated, evaporation, crystal.

(7-18, p.308)

of "classrooms" and "timetables", two paragraphs each on "materials" and "evaluation", and four paragraphs on "suggested approaches".

The present round of Intermediate guidelines show a dramatic shift back to specificity in relation to topic suggestions. Undoubtedly the Science guideline (7-18) has gone furthest in this regard, since it offers a detailed outline for each unit, together with suggested procedures and time allotments, which together constitute the substance of a book of lesson plans. The Mathematics guideline (7-14) has a detailed breakdown of topics, but its suggested approaches are far more general in nature. The History guideline (7-9) deals mainly with the topic names; however, supplementary materials have been developed which elaborate the proposed units to some degree (7-10, 7-11, 7-12). Finally, the Geography guideline (7-13) presents fairly elaborate suggestions for possible units in prose rather than in point form, and additional supplementary documents are in preparation (7-17).

If the Science document is indicative of a forthcoming trend, the lesson plan material given to teachers in a given discipline will lack the uniformity evident in the guidelines of a quarter century ago. Although it would be facetious to purport to offer a "representative" piece, the material in Figure 5 is adequate to illustrate the continuing problem in defining objectives from topic and procedural statements. One would imagine, for example, that the first two statements are intended to indicate definitions of concepts, and one may surmise that the student is expected to learn the criterial attributes of the concept. The third statement hints at some sort of application, although the rote ingestion of teacher-presented material would be claimed to meet the statement as given. The final sentence is particularly ambiguous, since it couples an undefined intended outcome with

what is becoming an ubiquitous tendency to hedge potential objectives statements with a "should have the opportunity to" preamble (one wonders if the student has the right not to accept the opportunity?).

In summary, the analysis of practical frameworks oriented material indicates that:

(i) such material has varied in quantity, in relationship to the overall guidelines, from highs of approximately 80% at the beginning and end of the period in question, and a low that approached 0% in the Intermediate guidelines of the early 1970's;

(ii) at any point in time, the material varies considerably in respect to what can be inferred about objectives, but no trend is in evidence in this regard.

It will be obvious that these observations point out two serious problems for a long-term study of aims and objectives. First, since there has been a continuing discrepancy between the breadth of the aims and objectives proposed in the general statements on the one hand, and what teachers could "get away with" if they took the narrowest interpretation of the topic and procedural suggestions on the other, the question arises as to what are to be taken as the "real" objectives. We have no alternative but to deal with the delineated breadth of the Ministry's aims and objectives, rather than the de facto breadth of the teacher's intended outcomes.

At the same time, however, a study of aims and objectives cannot ignore the suggestions regarding topics and procedural matters, since they sometimes suggest facets or interpretations of the general aims and objectives that would not otherwise be determined. In general, they are probably most useful

in getting at intended contexts, even though they are typically vague in respect to intended outcomes. For example, most current Intermediate grade guidelines make some reference in their general statements of objectives for the need of training in decision making, but until one looks at proposed topics and related materials, it is difficult to tell whether the intended context is the decision making class at school (as would be the case if typical far-fetched decision making exercises are given), the self (as in individual decision making), the small group (as in two-person or family decision making), or the large group (as in class, club or political party decision making).

Image-Action Linked ("Reflective") Statements

It seems reasonable to believe that teachers organize their thinking about daily activities in the same way as most people do, including academics. If they were academics, teachers would plan their time in terms of certain kinds of activities; sometimes they would be lecturing, sometimes meeting individually with students, at other times attending meetings, and yet at other times writing reports (e.g., for CODE). Most of the advance thinking we do about such activities has to do with how we will spend the time, what the topics will be, and what procedures we will use to deal with these topics.

In the author's view, it takes a deliberate effort either for academics or teachers to detach themselves from the natural focus on proposed actions (and their underlying procedures) to a more reflective posture in which one considers the intended outcomes or objectives of the action. We have found, for example, that it takes continued reminders to get graduate students who are acting in consultancy roles to focus on the intended outcomes of their interactions with teachers as opposed to the agenda for the meeting.

The case could be made, then, that the concept of "objectives" is not prominent in the teacher's action oriented way of thinking about the upcoming interaction with students. It is likely that a similar case could be made for such terms as "evaluation" (which requires one to consider the cumulative outcomes of one's actions over a period of time), "implementation" (which requires, among other things, that one consider the degree to which the objectives of a program are being put into practice) and even "curriculum" (a term that has various meanings to academics, but is used very little by teachers).

This is not to say that teachers do not have versions of these notions that are close (conceptually) to the actions performed in classrooms, but we make a mistake if we confuse the teacher's notion of "testing" with the theorist's more abstract notion of "evaluation". The teacher may think of finding out whether the student understands the material that has been covered, while the analyst wants to determine whether the student can perform at some defined standard at level X on outcome subtype Y of outcome category Z in context A. The difference between these conceptions lies both in the precision of discrimination made, and in the comprehensiveness of the system in which such discriminations are related.

The primary value of highly developed reflective (objectives) language is that, through its several stages of increasing discrimination, the abstract image of the educated person becomes translated into limited outcomes that could constitute the focus of the teacher's lesson plan. Further, the progressive elaboration of this system, i.e., the discriminations actually made, reflect other critical images, particularly those of the discipline and learner, so that the final outcome statements should be both compatible

with a set of objectives for the discipline and appropriate as specific foci for types of methodology.

While our contention would be that there has been a general increase in the use of all types of image-action linking language over the period in question, our heavy focus in this study on lists of objectives requires that they be treated extensively, and the next section is therefore devoted to this purpose. We will simply note here that a study of the sections on Evaluation, which began to appear in guidelines in the mid-1960's, indicates that they sometimes say more about aims and objectives than sections one would expect to be dealing with them explicitly. (A good example of this type is found in the Physical and Health Education Interim Revision (1967, p.22). The implication is that the linking (reflective) material has to be examined in each instance to determine the extent to which it deals with aims and objectives, or the special emphasis or contexts it proposes for particular outcome types.

Summary

The prospectus for this study was drawn up under the naïve assumption that statements of aims and objectives could be easily separated from other components of guideline material. However, reflection on the use of the proposed objectives classification system, followed by the study of actual guideline material, revealed that different types of guideline statements have different relationships to aims and objectives formulations.

As it turns out, aims and objectives statements themselves constitute part of the language that links images and practical activities, and other components of this language (particularly evaluative statements), may speak as directly to aims and objectives as sections so designated. Action-oriented statements, which at times have made up the bulk of a guideline, present a problem in that they speak with varying degrees of explicitness to aims and objectives.

Image language has a variety of implications for an aims and objectives study. The most critical are that:

(a) images and global goal statements tend to be inextricably intertwined, and so must be examined together, and

(b) knowledge of the underlying conceptions of the learner are frequently critical to retrieving the meaning of individual objective statements.

D: TRENDS IN THE INCIDENCE AND DISCRIMINATION OF AIMS AND OBJECTIVES STATEMENTS

Incidence of Explicit Formulations of Aims/Objectives

One of the most obvious contrasts between the guidelines in effect in the early 1950's and those in effect today is the number of lists of aims and objectives by which the classroom teacher is now confronted. In 1951, for example, the typical elementary school teacher had as guidance on "objectives", a description of "The School's Threefold Task" (a derivative of the images) and a paragraph or two entitled "The Aim (or Purpose) of the Course". Today the Grade 8 teacher of History is informed by the following designated sets of objectives:

(1) The Goals of Education in Ontario, referred to earlier (7-7);

(2) Twelve Ministry expectations for the Intermediate Division, described in the General Guideline for the Intermediate Years (working draft, 1975) which contain objectives derived from the general goals. Although this working draft has never been officially released, it is still listed as an intended Ministry publication;

(3) A set of aims for Intermediate Division History (7-9, p.6);

(4) A set of general objectives for Grades 7 and 8 History (7-9, p.8);

(5) Sets of objectives for the suggested units, located in the supplementary unit outlines (7-10-11-12).

These statements have been collated in Appendix B for comparison and later analysis.

The impulse for writing objectives seems to be running amok and is including, among its victims, any enthusiasm teachers might have had for looking for guideline objectives statements for some sense of direction. In the recent Intermediate Science guideline, for example, the teacher is presented with: a set of aims (7-18, p.4); a 23-page section designated Some Learning Objectives for the Science Program; a 14-page section Criteria for Evaluating the Science Program that deals mainly with intended learning outcomes; and introductory statements to unit outlines which sometimes contain additional objectives. English guideline writers appeared to have resisted objectives statements until quite recently, but have now compensated for previous deficiencies in this regard by offering (in the new Intermediate guideline) no less than four levels of aims/objectives definitions beyond the twelve Ministry expectations (7-7, pp.5, 10-13, 28, 31-32).

As a final note, the marked contrast between the 1951 and current guidelines in respect to objectives statements cannot be construed as extreme values on some well-defined intervening trend. In fact, the Social Studies guideline issued in 1951 contained a set of aims for the Intermediate Division organized under "knowledge and understanding", "skills", "attitudes" and "behavior", as well as objectives for each of the units outlined in it. The Mathematics section of the same document, however, contented itself with the ten general objectives. And of the five major Intermediate guidelines of the 1970's, only the History guideline had a designated list of objectives. Perhaps part of the explanation for the variation between disciplines, as has been hinted at earlier, is that the statement of "topics" in Mathematics guidelines are very much akin to skill objectives, so that guideline writers probably feel little urge to elaborate their intended outcomes further.

The Discrimination of Outcome Types

An (reflective) aims and objectives language is useful to the extent that it allows one to discriminate outcomes that are intended from those that are not, and outcomes actually attained from those that were not, the advantages being that one thereby has a stronger focus for one's pedagogical and evaluative efforts respectively. As an extension, sets of objectives are useful when this enhanced discrimination constitutes the basis of their logical connections. What we should expect, then, is not simply a proliferation of objectives statements, but rather the progressive discrimination of objectives types both over time within a subject area, or between levels of objectives statements at any point in time. So the question arises as to whether there is any evidence of such changes in the period under study.

As for a starting base, the 1961 Grades 1-6 guideline spoke of the intended outcomes of the enterprise system in terms of "attitudes and appreciation to be developed", "understandings and knowledge to be gained", and "abilities and skills to be increased" (6-1, p.20). And as was previously mentioned, the Intermediate Social Studies document of the same period proposed a set of aims under the headings: "knowledge and understanding"; "skills"; "attitudes"; and "behaviors", the latter referring to what we would now designate "traits" (e.g., accepts responsibility). When the instances given were projected on the outcome category system outlined in Part B of this report, there was some subdividing and changes in subcategory names (e.g., to designate as "beliefs" some of the items termed "attitudes"), but there was no need for changing the location of any particular objective from one category to another. So it might be said that the objectives statements of this period reflect the modest beginning in the discrimination of categories within a single logical structure.

We can find no evidence that there has been any increase in the degree of discrimination among types of intended outcomes in guideline statements produced since that time. While support for this assertion is scattered throughout the numerous documents involved (in fact, the reader who is attuned to outcome category discrimination gets a "feel" for the level of objectives discussion in much the same manner that a knowledgeable person gets a "feel" for the level of sophistication in a piece of writing in his area of specialization), the following specific points can be made:

(1) In a relatively few instances, the guideline objectives writer says enough to convey the notion that he has not quite sorted out his principal categories. Instances of this kind can be found in the Intermediate English guideline; for example, under a set of headings which seem clearly intended to convey skill objectives (think, speak, read, listen) we find under "reading": "demonstrates a precise understanding of the denotation...of words encountered in reading" (7-7, p.11). To most people, this would simply mean "demonstrates knowledge of the meanings of words encountered in reading", which would suggest that knowledge is the primary category in question. Much later (p.20) the same document identifies the list of objectives with a "checklist of skills"; this is in line with a tendency the author has observed among English curriculum committees to attempt to treat all objectives as though they were "skills".

(2) If current guideline writers make more sophisticated discriminations than did their counterparts of the past, they would be inclined to do so if their discussions would thereby acquire more "punch".

While one might excuse the lumping together of many types of outcomes, under a broad group of general "aims", discrimination by types of objectives seems essential to intelligent course and unit planning. Yet none of the current guidelines makes anything but the most rudimentary classifications at this point. The Intermediate Geography guideline (7-13, pp.14-15) speaks of "content" and "skill" objectives; the History guideline (7-9, p.8) speaks of developing "skills", "concepts" and "values"; the English guideline (7-7, pp.10-13) reports its objectives in terms of "listening", "writing", "speaking" skills; and the Mathematics guideline (7-14, p.1) offers only a very general treatise on aims.

(3) Another line of evidence is the failure to make those discriminations within categories that are needed to convey the meaning intended, or to take appropriate action. For example, the Intermediate Geography guideline states, in reference to the Warman concepts (i.e., regionalism, aerial differentiation, spatial interaction, etc.): "While these ideas can be helpful in organizing studies, they should not be regarded as generalizations to be taught" (7-13, p.40). One can infer from this and many similar instances that guideline writers, as well as teachers generally, do not make many distinctions within the knowledge category, and tend to equate roughly "ideas", "concepts", and "generalizations". As was pointed out in Part B, and at the beginning of this section, such distinctions are necessary if pedagogy is to have a precise procedural basis.

A similar lack of differentiation of subtypes occurs in respect to intellectual skills. Sometimes various subcategories are suggested ("research skills", "inquiry skills", "communication skills") but their interconnections have evidently not been thought out in any systematic way. For example, EPJD (7-3) speaks of "the ability to apply rational processes in the solution of problems" as one objective, and the "skills of inquiry, analysis, synthesis, and evaluation" as another (7-3, p.6). Similarly, the 1977 History guideline (7-9, p.6) refers to: "research skills" (which includes "the ability to draw and select information from non-print as well as print resources"); "communication skills" (which includes recording information); and a miscellaneous, unnamed set of skills (which, therefore, evidently involve neither "research" nor "communication") which includes the ability to distinguish fact from opinion, to detect bias, to form an hypothesis, to evaluate and interpret evidence, to draw conclusions based on evidence, and so on. The difficulty with such totally garbled listings of skills is that they seem more likely to inhibit than to facilitate the teacher's working out a coherent set that could become the basis of lesson planning.

(4) As was pointed out in our discussion of the category system, the description of hypothesized interrelationships between categories is as integral a part of the development of the system as the designation of main categories and subcategories. To our knowledge, there is not a single reference in all the guidelines surveyed which provides a consistent description of the

relationship between two designated categories (e.g., knowledge and skill, or between cognition and affect).

(5) At a much more demanding level, the possession of a sophisticated classification system for aims and objectives would affect the links that were developed between lists posed at different levels; in other words, the objectives writer working at level N would see his objectives as a refinement, subdivision, or particularization of the objectives at level N-1 (level 1 is the "top"). The fact is that the authors of objectives statements at one level seldom make any reference to a presumably superordinate set of objectives, and when they do, it is of the weakest possible sort; thus the general objectives of the Grade 9 History course (7-9, p.8) appears to subsume the presumably more general division "aims" (i.e., the last objective of the Grade 9 general objectives list is to attain the divisional aims). The English guideline (7-7, p.10) proposes that all its (extensive list of) skill objectives "form essential elements of each of the aims", although examination of the content of these two lists suggests that it is scarcely believable that this is the case.

(6) These last instances hint at guideline difficulties with the logic of objectives relationships, a second area in which we expect to see growth. This is exemplified even more dramatically in the 1973-75 attempts to formulate general goals, and in which a much more sophisticated cross-multiplication was attempted. That exercise is of sufficient significance to any analysis of objectives statements that it warrants further study.

We may begin by looking, by way of comparison, at the logic of the 1937 statement, focussing particularly on "The School's Threefold Task" (4-1, pp.6-7). The general nature of the first of these tasks is signalled by the term "understand the nature of...", indicating that a statement about some kind of knowledge will follow. The paragraph goes on to suggest that the kind of knowledge intended is an understanding of relationships in particular contexts. Finally the paragraph indicates that the contexts in question are intimate human groups, the larger society, and the physical environment. This lucid statement can be plotted as a row entry on an outcomes X contexts matrix with little difficulty, as shown in Figure 6.

The second of the school's tasks has to do with "ideals of conduct"--which we would now interpret either as "values" or "traits"--and the context is a Christian democratic society. The school's third task clearly involves abilities or skills, and these skills have to do with reading efficiently and critically, making simple calculations, and communicating ideas and emotions. These statements also appear as row entries in Figure 6.

What this analysis suggests is that the 1937 statement was an almost perfect example of what has recently been described by Christensen as the "generative rhetoric of the composition" (7-3): when the logical structure of its organizing framework (Fig. 6) is examined, each paragraph begins by entering a major row (exemplifying the principle of coordination) and proceeds to add detail in the way of contexts for the outcome defined in that

Figure 6

Organizing Scheme for Goals of Education - 1937

	Contexts →				
	Self/Individual	Intimate (small) Groups	Society	Supernatural (Christian, Philosophical)	Physical Environment
Task (1) Knowledge (understanding relationships)	----------	---------- X ----------	---------- X ----------	----------	---------- X ---------- →
Task (2) Values/traits	---- X ----------	----------	----------	---------- X ----------	---------- →
Task (3) Literacy Skills (reading, writing, computation)	----------	---------- X ----------	---------- X ----------	----------	---------- →

Figure 6a

Organizing Scheme for Goals of Education - 1973

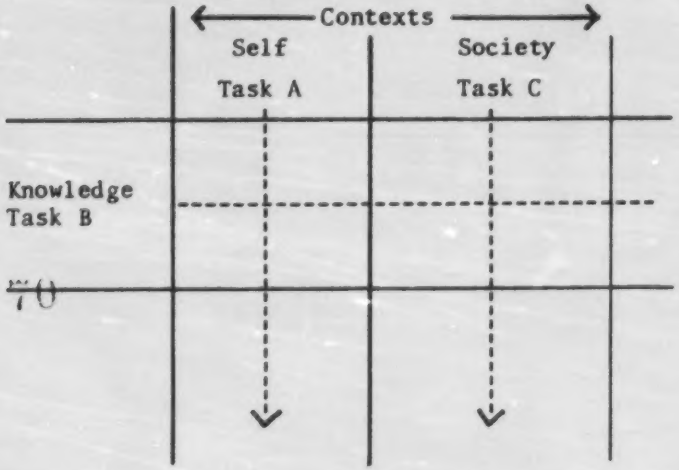
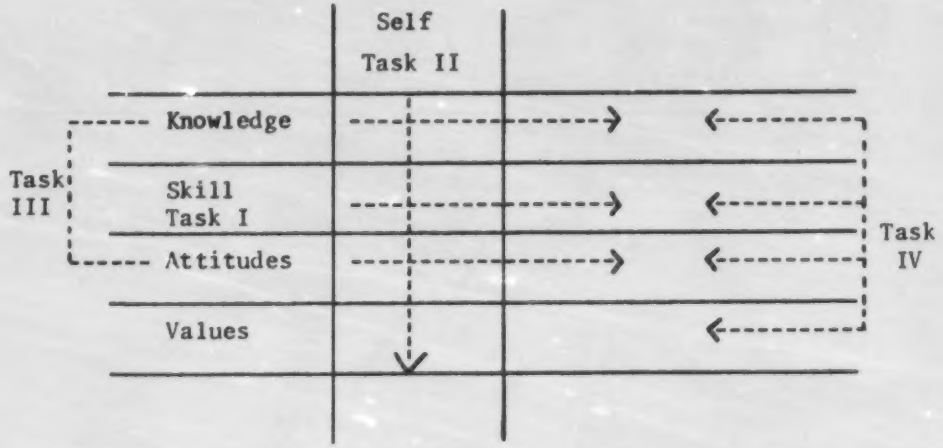


Figure 6b

Organizing Scheme for Goals of Education - 1975



row (illustrating the principle of subordination). Moreover, although the framework is not provided by the author, its dimensions and details are perfectly clear in the description provided.

We may now turn with profit to the 1973 statement, and particularly to the three headings under which goals are organized. The first centres on self (self-discipline, self-direction) and creates the anticipation of a list of self-oriented outcomes that can be subordinated to this general statement.

The second organizing statement keys in on "knowledge", and one anticipates therefore, a delineation of context-specific knowledges that can be subordinated to this organizing principle. The third organizing notion keys on the social context, and one would again expect a set of specific outcome types that can be related to that context.

One can discern immediately from a visual representation of the relationship of these organizers (Fig. 6a) that a two-dimensional matrix is being entered from both a columns and rows perspective, and so can anticipate that there is bound to be (in logic) overlap. This overlap is not difficult to find: in A (i), intellectual development is one of the goals stressed, but this goal is reiterated in greater detail in B. In fact, B must overlap with any other column that deals with intellectual skills, and so with C (which speaks of "developing skills and abilities...").

In trying to read off the same matrix from both a columns and rows vantage point, the exposition violates Christensen's principle

of coordination. However, the same account does violence to the principle of subordination as well; although it generates the anticipation in A that we will be given subsumable details, the account goes on to list the "cultural development" of the individual, which term (given that most notions of culture are extremely broad) is likely referring to a more all-embracing category than its supposedly superordinate organizer. The same kind of "category exploding" is done in B, where a "knowledge" organizer is exemplified by complex intellectual skills, and in C, where "social consciousness" is exemplified by something that seems to encompass the total spectrum of human development (Cv).

Evidently the Ministry sensed that there was something wrong with its 1973 goals organizer, for in 1975 the scheme was reorganized under four headings. Examination of these new organizers (Fig. 6b) suggests that: the first has to do with skills, hence providing a row entry; the second has to do with the self, hence providing a column entry; the third purports to deal with knowledge and attitudes, hence providing a double row entry; and the fourth speaks of "moral and aesthetic sensitivity" which has no specific meaning on the surface, but whose details seem to involve every kind of outcome category, thus providing a multiple row entry.

Since the same basic logical flaws are in evidence in the 1975 statement, it is doubtful whether the product is any easier to follow. Perhaps we have here an explanation of the contrast between the warm regard accorded the 1937 statement and the

reactions the current goal statements have drawn. It is simply the case that the sophisticated mind finds it difficult to assimilate and remember material in which, for example, the development of "physical fitness" appears where one is led to expect an example of the "knowledge" and "attitudes" needed by the student.

The author's contention is that the writers of the 1973 and 1975 statements of goals could not have filtered their statements through any sort of structure that respects the logic of class relationships. This is tantamount to saying that the authors had no clear meaning for many of the terms they were using, beyond that required by the ability to use them correctly in context.

In summary, the examination of both past and current statements of objectives suggests that the objectives language is indeed foreign to the thinking of their authors (of whom, currently, a large proportion are teachers), and that the names of outcome categories has meaning essentially at the "consistent usage in context" level. Having no consistent set of criterial attributes for category types, the guideline writer is able to make consistently only the most elementary of distinctions (e.g., a knowledge/skill distinction). He begins to falter when classifications are required of more complex sets (e.g., subdivisions of types of skill). And when the category concept is employed in cross-multiplying objectives, the resulting list becomes overlapping and redundant.

E (I): CHANGES IN BREADTH AND RELATIVE EMPHASIS IN GUIDELINE AIMS AND OBJECTIVES STATEMENTS

In undertaking this analysis we have to assume that, despite their imperfections, aims and objectives statements can direct us to legitimized sets of intended educational outcomes. This is not a difficult assumption to accept because the fact that the meanings of intended outcome categories have not been articulated to a criterial level does not preclude a consistent use-in-context that reveals the intended domain of outcomes. It is the scope of that domain that is of interest to us here.

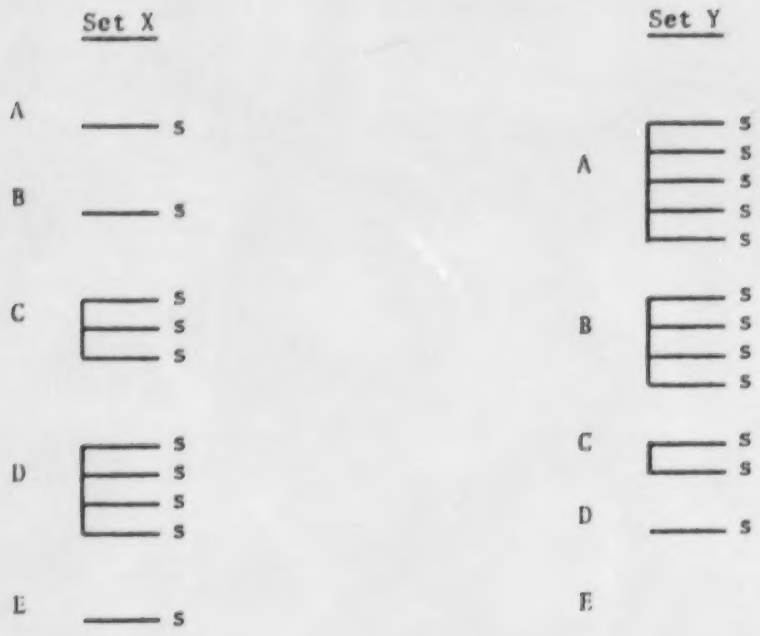
Definitions of Breadth

In ordinary language it is common to speak of such things as "the breadth of a program", "the breadth of a person's thinking", and even "the breadth of a set of objectives". Sometimes linguistic alternatives are used, as we speak of something as being "broadly conceived", as the original study prospectus did.

However, once we start to think more deeply on the matter, with a view to making some kind of comparison, we find all sorts of obstacles in our way. For one thing, it seems possible to distinguish between potential breadth (outcomes that one is allowed to pursue) and delineated breadth (outcomes that one is required to pursue). This distinction seems to make sense in respect to educational objectives, and provides the main basis of the core/non-core distinction.

The problems that arise when we try to get a measure of breadth could perhaps best be illustrated by a diagram. We will suppose that two sets of

objectives (X and Y) have been proposed, and that the statements under each proposal have been organized as items under a number of categories (A, B, C).



Perhaps our first inclination would be to say that X is broader in scope (has greater breadth) than Y in view of the fact that more primary categories are exemplified by the statements in X. This would constitute what in the creativity literature would be deemed a preference for "flexibility" (number of categories) over "fluency" (number of instances within a category) as an indication of breadth. The difficulty encountered in a multi-stage category system, however, is that fluency at one stage can become the basis of flexibility at another; for example, if at the first stage of system Y a large number of "skills" outcomes is postulated, these would very likely form the basis of a larger number of sub-skill categories, and hence at a subsequent stage of discrimination in the classification scheme set Y could have a greater breadth (total number of subcategories). A further difficulty is that categories tend

to be related, so that entries in one category sometimes presuppose entries in another, even though the latter may not be mentioned. For example, most beliefs are founded on some kind of propositional knowledge, so that the intention to produce a belief is, in those instances, an intention to produce a certain kind of propositional knowledge, even though the latter may not be stated as an objective.

Two conclusions are drawn from this analysis. First, it would be extremely difficult to formulate a precise definition of "breadth" that was based on a defensible rationale (the term "breadth" has the unfortunate ring of an interval scale when we are obviously dealing with much looser data. However, a potentially useful ordinal comparison of the delineated breadth of two sets of objectives might be had by:

(a) developing a multi-stage outcome category system to the point where it is able to deal with all the distinctions made by each set;

(b) forming a matrix by cross-multiplying this subcategory system with a set of contexts that is sufficiently differentiated to handle all the context distinctions made by each set;

(c) counting the number of cells exemplified by the statements of each set (if we had some uneasy thoughts about "error", either in formulation or interpretation, we might ask for two entries in a cell before we deemed it "exemplified").

A second conclusion is that this comparison of delineated breadth could, in theory at least, be made at any number of different levels of aims/objectives specification. Thus, in view of the hierarchically organized sets of objectives statements lists we have today, one could plausibly make this

assessment at the level of the most general, or first articulated set of goals (i.e., that follow most directly from guideline articulated "images"), or again at the level of general aims for a school division, or again at the level of the general aims for a particular discipline, and so on.

Our approach will be to attempt a comparison at both ends of this continuum, that is, by making an assessment of breadth at the most global level of goal statements, and then again at the most differentiated level possible from guideline statements. The latter comparison will require that we look at the objectives for individual subject areas; but since it has been previously shown that practical framework statements specify objectives to varying degrees (though the statements are not labelled "objectives"), such statements will have to be examined for the inferences one can make about their intended objectives.

Relative Emphasis

Fortunately this is an easier concept to come to grips with conceptually, because the "measurement" intended is purely nominal. To return to the diagram above, it seems that we could describe the relative emphases of proposals X and Y in terms of the proportion of their items that fell in each of the categories. It would also appear that, as with breadth, relative emphasis could be described at each of a number of levels of objectives definition. Consequently, in what follows we will attempt relative emphasis observations at the two levels indicated for breadth.

A Breadth and Relative Emphasis Comparison of Global Educational Goals (1937 and 1975)

The origin of these goal statements, which appear in their entirety as Appendix A to this document, has already been discussed. The official set of goals (formulated in 1937) began with the following enunciation of the overall purpose of public education:

> The schools of Ontario exist for the purpose of preparing children to live in a democratic society that bases its way of life upon the Christian ideal.

It then proceeded to describe the attributes of the democratic society, of the educated person, and the resulting "threefold task" of the school.

The goals of education in Ontario, as formulated in 1973 and revised in 1975, are presumably still in effect today. The second statement of these goals will be the object of our analysis; this statement did not provide a one-sentence summary of the overriding goal of public education, but instead declared that:

(a) "It is the policy of the government of Ontario that every child be granted the opportunity to develop as completely as possible in keeping with his or her talents";

(b) In pursuing their responsibilities under this policy, schools were to keep in mind the necessity for the continued development of society, that individuals accept a minimal set of common values.

This statement went on to the detailed listing of goals whose logical structure was examined in a previous section.

In line with the procedure proposed for obtaining an ordinal comparison of breadth, we first elaborated the outcome category system until it was capable of incorporating both the contexts and the outcomes subtypes

distinguished by both sets of goals. Each statement appearing in the articulation of images and resulting global statement of goals was then plotted on this grid, yielding the results shown in Figures 7 and 7a.

As might be expected, some of the statements did not trigger a category name immediately, so that a reconstruction of meaning had to be made prior to the assignment. In general, the problem was that guideline statements may not have been precisely enough formulated to indicate the exact subcategory intended, so that some kind of conversion rule had to be employed to decide between plausible assignments. This was a complex process involving an interplay between the term employed, the context, common interpretations of the term, and the set of consistent distinctions made by the outcome category system.

In some instances the appropriate category for an ambiguous statement was suggested by the immediate context. Where the context was not suggestive, one or more categories might be suggested by common interpretations of the term employed. In either case, only those suggestions were considered that were consistent with the underlying conceptions of the learner, hence with the basic system of categories, subcategories and category relationships postulated in the outcome category system.

As an example where context clues were employed, we might consider the word "appreciation", a term that has figured prominently in Ministry guidelines over the years and which appears more than once in the 1975 statement, evidently with more than one meaning intended. The expression "appreciation of music" was taken, within this set, to denote an affective response, so that the person who had such an appreciation could certainly be said to "value" music; hence this type of appreciation was entered as a value. On the other hand, the statement "an appreciation of the conduct described by...ethics" was taken

CONTEXTS

CATEGORY	CONTEXTLESS	SELF	INDIVIDUAL/OTHERS	SOCIETY: Laws	SOCIETY: Ethics	SOCIETY: Other Cultural Groups	SOCIETY GENERALLY (including culture)	COMMUNITY	PHYSICAL ENVIRONMENT
KNOWLEDGE			:Understanding of intimate relationships				*:Understanding nature of society *:Knowledge of conventions x:Knowledge of human relationships x:Knowledge of societal organization		x:Knowledge of physical environment
SKILLS	x:Ability to read efficiently x:Ability to make simple calculations x:Ability to write		:Social techniques x:Communicating ideas/emotions to others x:Receiving communications from others *:Skills necessary for group undertakings				:Abilities required in democratic society *:Skills employed in democratic social life		
COMPLEX	:Ability to adjust to new conditions :Ability to meet changing conditions with intelligence :Ability to give intelligent self-direction	x:Reading critically							
FEELINGS		:Self realization, security, and happiness							
ATTITUDES							:Attitudes/beliefs required by life in democratic society		
VALUES							*:Accepts ideals of society		
HABITS		:Action in interest of self :Self control	:Acting in interests of all :Working cooperatively with others :Getting along with others :Having an acceptable personality :Accepting responsibility :Helpfulness :Working constructively with others				:Acting in socially acceptable manner :Acting as a good citizen		
BELIEFS			:Accepting purposes/beliefs of group		x:Values ideals of Christian democratic society				

FIGURE 7

GOAL STATEMENTS FROM "GRAY MOA", 1957

CODE: *: OUTCOMES DERIVED FROM PRECEDE TO THE SCHOOL'S THREEFOLD TASK

X: OUTCOMES DERIVED FROM THE THREE SPECIFIC STATEMENTS OF GOALS

: (UNMARKED) OUTCOMES DERIVED FROM GENERAL PRECEDE

CONTEXTS

CATEGORY	CONTEXTLESS	SELF	INDIVIDUAL/OTHERS	SOCIETY			SOCIETY GENERALLY (including culture)	COMMUNITY	PHYSICAL ENVIRONMENT
				Laws	Ethics	Other Cultural Groups			
KNOWLEDGE	:Knowledge of mathematical concepts	:Knowledge of own interests/abilities/ goals :Understanding of self :Knowledge essential for satisfactory/healthy life			:Knowledge of ethics/conduct they prescribe	:Understanding of other social/cultural groups	:Understanding of functioning of society and individual's role :Knowledge of cultural heritage	:Knowledge of environment in which he lives	:Knowledge of physical environment
SKILLS: SIMPLE	:Ability to comprehend by listening/reading/viewing :Ability to communicate through writing, speaking, other media :Ability to employ mathematical operations								
SKILLS: COMPLEX	:Ability to identify/ consider/solve problems :Ability to employ skills of inquiry, analysis, synthesis, and evaluation :Ability to apply reason to moral issues (moral development)	:Ability to evaluate personal interests, goals, and abilities						:Ability to share in life of community	
FEELINGS									
ATTITUDES	*:Positive attitude toward work/thought/leisure	:Positive sense of self :Self respect	*:Possessing respect for right of individual *:Concern for others :Respect for others	:Respect for law					
VALUES		*:Personal (clear) system of values					:Concept" of social responsibility :Appreciation of cultural heritage :Appreciation of art, music and literature		
TRAITS	:Intellectual curiosity, sensitivity, perseverance	:Desire for excellence/ competence :Desire for continuing self development :Desire for self evaluation :Actively pursuing physical fitness							
Developmental statements combining two or more outcomes categories/ unclassifiable outcomes	:Developing intellectually :Developing "awareness"	:Developing as completely as possible in keeping with own needs :Developing emotionally/ physically			:Developing morally		:Developing socially :Developing culturally		

FIGURE 7A

GOAL STATEMENTS FROM EDUCATION IN THE PRIMARY AND JUNIOR DIVISIONS, 1965

CODE: *: OUTCOMES DERIVED FROM PREAMBLE TO GOAL STATEMENTS

: (UNWARNED) OUTCOMES DERIVED FROM GOAL STATEMENTS

to indicate something different, namely, knowledge of such conduct, and was accordingly entered under knowledge. Both assignments, of course, are compatible with the outcome category system in use.

As an example where common interpretations were employed, the 1975 set of goals indicated that education is to contribute to "moral development". One current interpretation equates moral development with an increase in the sophistication of moral reasoning, in which case the objective referred to is a species of complex intellectual performance. On the other hand, another interpretation emphasizes the progressive elaboration and refinement of values, and it suggests an entry under the latter category. In this case, then, two entries were made for moral development.

There are, of course, the two standard questions about such procedures for converting guideline statements to subcategory entries. The first, having to do with reliability, is most easily answered, since it has been found on many occasions that there is a high degree of agreement between those using the category system in respect to the assignment of ambiguous items, and that they are consistently assigned by the same individual on different occasions. The question of validity is essentially unanswerable since it goes back to the intended "real" meaning of the statement's author, which must remain unknown. What our procedure does allow us to do, however, is to locate the total set of objectives statements within a consistent, underlying-image (of the learner)-congruent framework, hence to confer on this set the highest degree of consistent meaning it is able, on analysis, to sustain.

Comparison of Breadth

A first observation is that the 1937 statement of goals must be considered, by almost any conception, very "broad" in its intentions. As the authors of Living and Learning put it:

> The simple but startling truth is that virtually every idea in it, with only one immediately noticeable exception, might have been expressed by educationally enlightened and advanced authors today.

Somehow, one would imagine that a statement expressed by "educationally enlightened and advanced authors" would contain about as much breadth as anyone would desire.

At the same time, one can say that the 1975 statement of overall educational goals (maximum development of potential plus value "riders") is clearly less restrictive than the 1937 version (preparation for life in a Christian democratic society), since the 1937 statement places, at least in theory, two restrictions on goals that are not in the more recent one. Consequently, today's set of goals would have to get higher points on a measure of potential breadth.

Examination of the two tables involved indicates that the 1975 statement also exhibits at least a marginal increase in delineated breadth as well. Both statements appear to deal with all the major outcome categories and subcategories although, as will be argued below, it is questionable whether the 1937 general references to what today would be regarded as "complex intellectual skills" should be so interpreted, in view of their subsequent elaboration in that document. And on the question of contexts, the 1975 statement certainly delineates more such contexts, although some are rather thinly covered; moreover, one might argue that since the 1975 statement was premised on an active-information-processing stage development conception,

it could be inferred that massive transfer to a variety of contexts was intended for the larger proportion of "contextless" outcomes contained in that statement. In sum, then, the case that the delineated breadth was at least marginally increased seems to be supportable.

Comparison of Relative Emphases

A comparison of relative emphases is compounded by the fact that we found it necessary, for reasons cited in an earlier section, to combine both the preamble and the goal statements themselves in our analysis (the statements appearing in Figures 7 and 7a have been coded to indicate their origin), and that the 1937 statement contained two preambles to its numbered delineation of goals. Nonetheless, it is evident that there was a substantial shift away from "social" and "other person" oriented contexts between the 1937 and 1975 statements. In the earlier statement, a large proportion of the outcomes had as their contexts society generally, or the individual's relations to others; in the more recent statement, the emphasis is on self-oriented outcomes (self-selected values; self-knowledge, self-evaluation and improvement skills and traits, positive feelings about self) and those which have no designated contexts at all (which are expected, presumably, to apply across a variety of contexts). Paramount among the self-referenced outcomes, one might think, is that the educated person should possess a "personal system of values".

A second difference in emphasis has to do with the types of intellectual skills that are clearly designated in the goal statements. While the earlier statement acknowledges in its preamble the skills necessary for dealing with a changing society, their later elaboration stressed what was designated the "literacy skills"--reading, writing, and computation particularly. The 1975

statement, on the other hand, adds to these such complex skills as analysis, synthesis, evaluation, the skills of inquiry, and the rational processes involved in problem solving. It is also clear that the educated person in the 1975 statement is expected to be able to apply these high level cognitive processes to an analysis of his own behavior (as in the ability to evaluate his own interests, goals, and abilities). We think it fair to say, then, that there was an increase between the two statements in respect to expectations for complex intellectual skills, as opposed to simple "literacy skills", and their application to more diverse contexts.

Further insight into emphases can be got from the order in which the organizing statements occur. In the 1937 version, this order was: knowledge first; attitudes and related traits second; and intellectual skills third. In 1973 it was: the self first; intellectual skill second; and knowledge third. By 1975 the order was: contextless skills first; the self second; knowledge and attitudes third; and a miscellaneous set of knowledges and skills related to "complete" development fourth. In our opinion, the order in which global statements occur is not accidental, and probably constitutes a crude measure of the relative intensity of feeling toward, relative value assigned to, or strength of orientation towards various types of outcomes. The high proportion of individual referenced statements, together with their preeminent position in the latter lists, tends to corroborate the earlier claim that the early 1970's marked a high point in the good-active conception of the learner.

Although it would be difficult to pinpoint any precise point between 1950 and 1975 when the shift in emphasis toward complex intellectual performance and self-chosen values began to occur, it is noteworthy that the

1971 compilation (7-2) restated the original goals with the notation "these aims of education are still applicable", but then added a "Restatement of Approach" which cited the following extract from Education in a Technical Age as indicative of the kind of education required today:

> Thus the fundamental demands of the technical age require the harnessing of the rational powers of the mind, and the development of transferable intellectual skills. The successful citizen of an advanced free society must be able to recall and imagine, to generalize and compare, to evaluate and classify, to analyze and synthesize, to deduce and infer. He must be able to base his choices and actions on understandings which he himself achieves and on values which he examines for himself.

It is equally noteworthy that most of the Intermediate guidelines that were issued in the early 1970's reflected this enhanced emphasis on self-verified as opposed to socially pre-determined values, and complex intellectual skills as opposed to the traditional "literacy" skills.

The "Image" Underlying the 1975 Statement

It is our impression that, in the period in which the 1973 and 1975 goal statements were made, the Ministry was struggling to create a new image of the educated person, but that the latter had not yet been articulated as a coherent statement with an internally consistent logic (the latter point was treated extensively in an earlier section). However, it is possible, we believe, to piece together such an image from the various components offered in the guideline. As a summary statement we might say that the educated person the Ministry writers had in mind could be described as: a person who is intelligently self-directed in the significant contexts of his everyday life. By this we mean that the individual is capable of solving problems of personal concern, guided by a set of values which, apart from a minimal set "essential to the continuing development of society", is essentially self-chosen.

Thus, the educated person is, above everything else, a self-directed problem solver, but the focus of his intellectual activity is not social concerns, or the general betterment of his fellow man, but rather the enhancement of his own capabilities in pursuit of a "complete life". Social responsibility seems a secondary concern, the mandatory aspects of which were limited to a small set of shared values, paramount among these being the right of other individuals to similarly pursue activities leading to a complete life. One of the questions that will concern us later is whether this extreme emphasis on individualism, derived from the good-active view of the learner, has been sustained in the recently released guidelines which reflect, presumably, at least a partial response to the criticism to which schools have been subjected in the past half decade.

E (II): SUBJECT AREA TRENDS IN BREADTH AND RELATIVE EMPHASIS

The procedure employed here was essentially the same as that used in the analysis of global educational goals. First, the outcome category system was developed to the point where it could incorporate all the aims and objectives statements of the documents in use in the 1950's, and the latter were plotted on the matrix, using methods described in the previous section to deal with ambiguous statements. Evaluation and content (planning framework) outlines were also studied, along with any supplementary Ministry comments or documents of the "advice to teachers" variety (e.g., 6-1, pp.8-23) for additional subdivision of intended outcome types, as well as main types of intended contexts (see later section on contexts). Aims and objectives for each of the succeeding "periods" were compared with this initial list, making additions where necessary; finally, the results were examined for changes in breadth and relative emphasis.

Analyses of this type were done for English, Mathematics, Science, and Social Studies (later History and Geography), while other areas were scanned in a less formal fashion. The result of each analysis was a set of rough notes, from which was constructed a summary of main observations. A sampling of the latter appear as Appendix C to this document.

Each major analysis had input from someone who was familiar with the field in question; in the case of English and Mathematics, the initial analyses were undertaken by consultants who have acted in an advisory capacity to curriculum committees in those areas, and their observations were then checked against the author's. The statements which follow are based on those parts of the analyses with which there was agreement between the two parties concerned (author and consultants).

Trends in Delineated Breadth

With an appropriate caveat--that follows from the substantial amount of interpretation required to classify the raw data in the guidelines--the author would claim that the following trends in respect to the determinants of breadth have occurred over the twenty-five years in question. These trends are referenced to the outcome category system, but are exemplified by reference to particular subject areas.

Increase in the Number of Delineated Variants of Complex Intellectual Performance

The guidelines of the 1950's tended to make general references to complex intellectual performance (i.e., intellectual activities in which a combination of simple skills are required, as indicated in the section on skill organizers in Part B). The Intermediate Social Studies guideline, for example, designated "critical thinking" and "making practical application of knowledge" (5-3, p.58) in their general aims, but these instances of complex intellectual performance were not followed up in the unit objectives, which deal almost entirely with knowledge ("understanding", "know", "learn"). Similarly, the Science guideline speaks of "developing the power and habit of straight thinking", and even proposes that the latter involves "seeing a problem, selecting and weighing evidence, and reaching a sound and sincere conclusion" (5-3, p.169). Some further references are made to "conducting an experiment" in the topic outlines, but this very frequently seems to mean no more than to measure or demonstrate (e.g., "Conduct an experiment to show that an undissolved solid may be separated from dissolved materials" (5-3, p.178). The Intermediate English guideline claims the "ability to think clearly" as an objective (5-3, p.23),

as well as "developing (the student's) own power of thinking" (5-3, p.41). But the exemplification of these objectives in the content outline seems fairly well limited to composition and conversation. Only the Mathematics guideline gives an explicit treatment of problem solving which suggests its use in real-life situations (5-3, p.142).

By contrast with its counterpart of the early 50's, the 1977 Intermediate Geography guideline goes beyond general exhortation for students to do "research" (7-13, p.10), to propose as objectives causal analyses (7-13, p.13), case studies (7-13, p.18), decision making (7-13, p.43), as well as a remarkable range of correlational analyses (e.g., 7-13, p.26). On the latter point it is interesting that while "patterns" and "relationships" were dominant organizing conceptions in both the 1951 and 1977 guidelines, the latter contains a much higher number of statements which can be interpreted as calling on the student to "discover" (as opposed to "understand") such relationships. Although not yet an official Ministry document, the recently prepared "Skill Development in Geography" (7-17) reinforces and expands the delineated types of complex intellectual performance called for in that discipline.

The various sections dealing with objectives in the new Science guideline present an almost equally impressive array of intended types of complex intellectual performance including "problems relating to the qualitative attributes of objects" (7-18, p.50), inquiries that "develop and apply good attitudes and values toward science related issues" (7-18, p.51), "decision making" (7-18, pp.52-53), "solving mathematical problems" (7-18, p.66), and "designing experiments" (7-18, p.50). In the latter case, it is clear that a much more sophisticated notion of experiments is intended than that indicated by the 1950 guidelines, namely, one that involves a clear conception of both the independent and dependent variables and the control of the former (7-18, p.66).

The recent guidelines in Physical Education indicate what is perhaps a sign of the times in respect to guideline treatments of complex intellectual performance. While early guidelines in this area focussed on "simple skills" (throwing, running, game-specific skills), guidelines from the late 1960's shift the emphasis to the complex psychomotor skill designated "body management": the integration of the action of various body parts to solve a problem "involving the relationship of the body and its movements to the room in which the child is working, to the equipment he is using, and to the people with whom he works" (7-2, pp.9-10). All this was designated "the ability to solve problems in movement" (7-2, p.22). The Intermediate guideline of the same period went beyond this to add as objectives: the ability to cope with stress; to make decisions; and to develop facility in problem solving in general as well as the ability to deal with "many problems he (the adolescent) faces as a result of the many changes occurring in his body" (6-11, p.1).

Of the subjects comprising the basic curriculum, it might be said that only English and Mathematics have shown little change in respect to the variants of complex performance called for, in part, perhaps, because they have advocated complex intellectual outcomes to at least some extent from the beginning of the period in question.*

The History guideline poses as an objective an instance of what might be deemed (in the organizing scheme for skills in Part B) hypercomplex intellectual performance (i.e., one which involves a combination of two or more problem solving types). The innocent-sounding formulation "to develop

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*Even this statement, however, must be qualified since the 1971 Mathematics guideline identifies decision-making skills as an objective to the attainment of which mathematics instruction should contribute (7-14, p.1), and the English guideline indicates as objectives complex tasks that have a substantial basis in cognitive action (e.g., synthesize disparate pieces of information for a purpose, 7-7, p.10).

and use an appropriate process for analyzing issues" masks an intellectual task, which, if done honestly, is evidently beyond the capabilities of most adults. Analysis of most issues of the complexity indicated in the guideline requires, as a minimum, the establishment of a decision making structure and, within that, the use of a causal model which indicates the likely effects of the alternatives proposed (which can be turned into criterial ratings). The Science guideline suggests with equal innocence that students should acquire some skill in "proposing theories and formulating models" (7-18, p.50); science instruction has always required students to understand models, and (very) occasionally to apply them to reasonably novel problematic situations, but to construct a model or theory that subsumes existing data is surely an instance of a high level of "synthesis", or as designated in our outcome category system, of self-referenced creativity.

Delineation of an Increasing Number of Simple Skills (and their subcomponents)

Underlying trends in the delineation of simple skills are previously mentioned conceptions of the learner as an active (purposeful), information processing entity whose assimilative structures pass through regular stages of development. It would appear that the emergence of this "model" has been correlated with a fundamental change in the basic paradigm for complex intellectual performance. As a case in point, while the 1950 Mathematics guideline stressed problem solving, and even talked of real-life applications, it offered the following "plan" for the student's guidance:

1. Read the question carefully, making sure that you understand every part of it.
2. Decide what you are asked to find.
3. Re-read the question to see what facts you are told. If you can make a diagram to illustrate the question, mark these facts on it.

4. Decide how you can use the given facts to help you find what is asked for.

5. Examine your answer to see whether it is reasonable, and then verify it by using it in the original statement. (5-3, p.142)

Clearly this "plan" is oriented to textbook applications of particular algorithms and does not reflect the requirements of purposeful, information processing in problematic real-life situations. Much more appropriate to such activity are the models proposed for problem solving in EPJD (7-3, p.61) and the new Intermediate Mathematics guideline (7-14, pp.12-13). In line with this latter model, current Mathematics guidelines emphasize such neglected components as: posing problems (7-14, p.11); the systematic study of "models to represent real situations" (7-14, p.13; 7-3, p.61); and gathering relevant problem data (7-14, p.1).

The proliferation of skill terms that can be linked to the active-information processing model is probably reaching epidemic proportions. The author has conducted independent analyses of the skills lists in Science, Geography, and History--in each case with the assistance of a consultant specialist in that area. The conclusions of each study were that (a) all the FORCN skills were indicated as objectives in each of the disciplines cited, and (b) Geography and Science reiterated these skills, or minor context-specific variants of these skills, with depressing frequency, in both their content and objectives sessions. As with objectives generally, the teachers of these subjects are currently being overwhelmed by skills objectives, the Skill Development in Geography document being an eye-opening case in point.

The Mathematics guidelines have been much more restrained in this respect, adding only the information-linked skills alluded to above. Over the years English guidelines have added "listening" (one of the two modes of

"decoding"; 7-3, p.7) and "viewing" and "observing" (6-13a, pp.3, 6), while interpretation is given more emphasis (7-3, p.13), as is writing as a means of communicating information to others. The expansion of the main skill categories from reading, oral language, and written language (1950's) to the standard encoding (writing, speaking)/decoding (listening, speaking) model (7-3), and the further expansion of the "thinking" skills to include some that would be designated "internal processing", suggests that English guidelines are being influenced by contemporary information processing conceptions of the learner, a movement parallel to that observed in Mathematics.

A further delineation of skills can be found at the next stage of elaboration of the category system in which the simple skills are further decomposed into subtypes. Perhaps the most obvious example of this is the expansion of the so-called map skills in Geography; their Intermediate guideline description progressed from the statement that "pupils should read, use, and make maps frequently" (5-3, p.61) in the early 1950's to a detailed list which constitutes one of the main sections (Skill Development) of each of the four early programs in the new Intermediate Division guideline (e.g., 7-13, p.7). A comparison of the skills listed in the English documents at the beginning and end of the period suggests a similar, though much more modest, expansion in the variants of reading, speaking, and writing skills.

Trends in Intended Affective Outcomes

The analysis of the intended affective outcomes is difficult because educators have not yet become comfortable with affect terms and have developed only the most fragmentary beginnings of classification of affective outcomes. In order to make sense of guideline data, we have used our own affect category system as an interpretive device, which no doubt increases the risk of "reading into" the guideline meanings that were not intended. Finally, although our main analysis in this section is concerned with trends in subject areas, the global statements of goals tended to set the general pattern for affect statements, and were included in this analysis as well.

As a start, we may note that guidelines have used affect terms of a global nature since the beginning of the period under study. The "Gray Book" spoke of the child's security and happiness (6-1, p.5), the Music section of the same guideline spoke of feelings and emotions (6-1, p.112), and the Intermediate English guideline of the same period, with a linguistic style that we might expect of that discipline, spoke of encouraging students to become "more mature in their emotional response, and more discerning in their attitude to life" (5-3, p.23).

Similar statements can be found in today's guidelines. EPJD, for example, speaks of the child's "emotional development", reflecting the developmental emphasis of guidelines of our times (7-3, p.7). The new Intermediate English guideline contains many statements relating to general affective outcomes including "enjoyment" (7-7, p.5), and "joy" (as in the joy of creativity; 7-7, p.12).

When we begin to examine intended affective outcomes by types, we note that guidelines from the beginning of this period acknowledged the desirable affective consequences associated with the competent performance of skills. Thus, the arithmetic section of the Grade 1-6 document in effect in the 1950's suggested that "doing successfully small sums and easy problems develops a comfortable feeling toward working with numbers" (6-1, p.95), while the Intermediate Mathematics guideline of the same period spoke of "confidence which comes from successful accomplishment" (5-3, p.141). Today's Intermediate Mathematics guideline similarly links successful performance with self-confidence and the enthusiasm with which the students will approach subsequent mathematical tasks (7-14, p.1). All these are references to what, in the category system presented in section B, would be designated "being able to" linked affect.

This designation suggests that we should next look at "knowing that" linked affect, and it is here, we believe, that some genuine trends can be observed. In the general statement of goals for the earlier period, reference is made to the student acting in a "socially acceptable manner" (6-1, p.6), "accepting as his own those ideals of conduct and behavior that a Christian and democratic society approves" (6-1, p.7), "accepting (society's) ideals" (6-1, p.6) and developing "acceptable attitudes" (6-1, p.12). What seems to be implied in such statements is a receptive view of affective outcomes; in other words, there was a set of "right" or "appropriate" attitudes (and other affective outcomes), and these would be internalized by the students provided that the teacher engendered the right atmosphere in the school and an appropriate "personal relationship" with the student (6-1, p.7). The guideline also expounded a view of mental health that tended to the receptive

end of the active-receptive continuum: good mental health was seen to be the natural state of affairs in an environment that was free from anxiety, repression and negative pupil evaluation (6-1, p.25).

The early notion of mental health seems to have been replaced today by the more active conception of a positive self-concept, a dominant term in the 1975 formulation of the general goals of education. On three separate occasions in this statement the guideline speaks of developing a positive sense of self, or a sense of self worth (7-3, p.7). What seems to be suggested here is that a positive self-concept is an active construction out of personal experience. This notion of active construction seems to have been carried further in the concept of "personal identity" (7-7, p.5); adolescents, according to the 1975 general Intermediate guideline, are "constantly searching and testing in an effort to know themselves" (7-2, p.2).

The latter account hints at one of the essential differences between the active and receptive acquisition of affective states: that active construction requires more substantial links with knowledge. Indeed, a constructed attitude has been described recently as a summary evaluation, a synthesis of beliefs based on empirical generalizations. Attitudes can be accepted or internalized at a much lower level of cognition, as through "identification" with a respected teacher (designated Attitudes I in our outcome category system). What we are suggesting, then, is that contemporary guidelines have in effect added a new "knowing that" subcategory of affect (designated Attitudes II in our system).

Consistent with the above interpretation, in today's guideline the term "value" has gained equal prominence with attitude. And the preferred route to value clarification is evidently through deciding between alternatives

in instances of complex decision making (7-13, p.44; 7-9, p.6), by the conduct of appropriate value inquiries (7-18, p.51), or by "reflection on moral and aesthetic issues" (7-7, p.27). In each case, values are "worked out" (7-3, p.5). They are both a product and concommitant of sustained intellectual activity.

What this speculative account suggests is that there has been a shift from the reception of internalization of acceptable attitudes to the construction and utilization of a personal value system. Moreover, the intended outcome is that these complex cognitive-affective structures be brought into play when the student is confronted with issues or problematic situations in real life.

Changes in Expected Knowledge Outcomes

If knowledge was a simple thing, we might have hoped to do something like a comparative map of the cognitive (knowledge) structures of students at the end of grade 10 in the periods defined for this study. What we would be looking for would be the constellation of knowledge specifics, concepts, generalizations, and theories in the respective cognitive structures and how these have changed over the years.

Of the many obstacles standing in the way of such an analysis, it will be sufficient to mention two that make it impossible. First, guidelines do not always speak directly to the knowledge outcomes intended; at the best of times they give a fairly detailed account of topics to be covered, but as we have shown for both past and present examples of the most detailed outlines, it is not typically clear exactly what knowledge outcomes are intended.

If one had an exceptionally large amount of time, one might look to the textbook, the de facto carriers of knowledge, to see how these topics were treated, but even then we would be speaking about actual practice rather than the Ministry's intentions.

Another problem has to do with the matter of options. Apparently educators themselves no longer believe (if they ever did believe) that it is possible to define a set of knowledge outcomes that everyone should acquire. The back-to-the-basics guidelines, which were intended by their political sponsors to move in this direction, have made the mandatory set so small, in relation to what is apparently taken to be the relevant domain of knowledge, that it is no longer useful for making comparisons of breadth over time. For example, less than twenty percent of the approximately two hundred topics in the new Intermediate Grades 7 and 8 Science section are mandatory.

In order to make any sense whatsoever out of trends in knowledge expectations, we decided to proceed on a rather different tack. In the sections that follow we will discuss three aspects of knowledge for which we believe changes in expected outcomes can be documented. These are (a) the sophistication of concepts and generalizations employed; (b) knowledge about the discipline; and (c) knowledge about inquiry processes.

We can make an entry into the first topic by looking at two objectives from the current Grade 10 History guideline (7-9, p.13) which specify as intended knowledge outcomes:

> to understand that any group brings its technology (machinery, tools, processes, techniques, etc.) to the new environment, that this technology is influenced by the new environment and by any existing culture, and that it in turn alters the existing culture;
>
> to understand that any group brings its lifestyle to the new environment, that this lifestyle is influenced by the new environment and any existing culture, and that it alters any such culture.

We may note that the first statement takes the form of a double-barrelled proposition (the technology a group brings to a new environment is influenced by this environment and by any culture existing within it; the technology that any group brings to a new environment alters the existing culture within that environment), the first of which links three concepts--technology, environment, and culture--in a causal assertion. The second statement has the same logical structure, only in this case the concepts linked in the causal assertion are lifestyle, environment, and culture.

To get some idea of comparative knowledge expectations, the author scrutinized the 1951 Social Studies guideline (Geography and History) for any objectives relating to the concepts in question (lifestyle, technology, and culture), and further examined the suggested methodology (which was quite detailed) to determine more precisely what was intended in respect to these concepts.

As it turned out, there was no specific mention of lifestyle. The term "culture" appeared in the specific unit objectives, once each in Grades 7 and 8, and twice in Grade 10. In the most extensive Grade 10 treatment (5-3, p.119), in a unit whose first objective is "to appreciate Canada's cultural heritage from Europe", there is the entry:

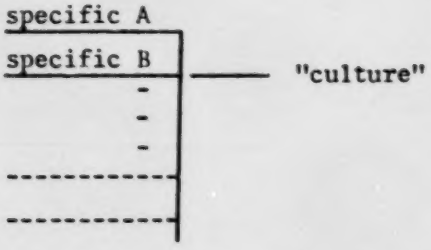
> Committees prepare displays illustrating great events, national heroes, famous buildings, and artistic achievements of some European countries, to show the cultural achievements of European civilization.

The term "technology" is not used directly, although the following entry appears under the topic heading "Man's wealth is increased by the processing and manufacturing of raw materials":

> Selecting a few examples of processed commodities, account for the location of the processing plants and show where the products are marketed.

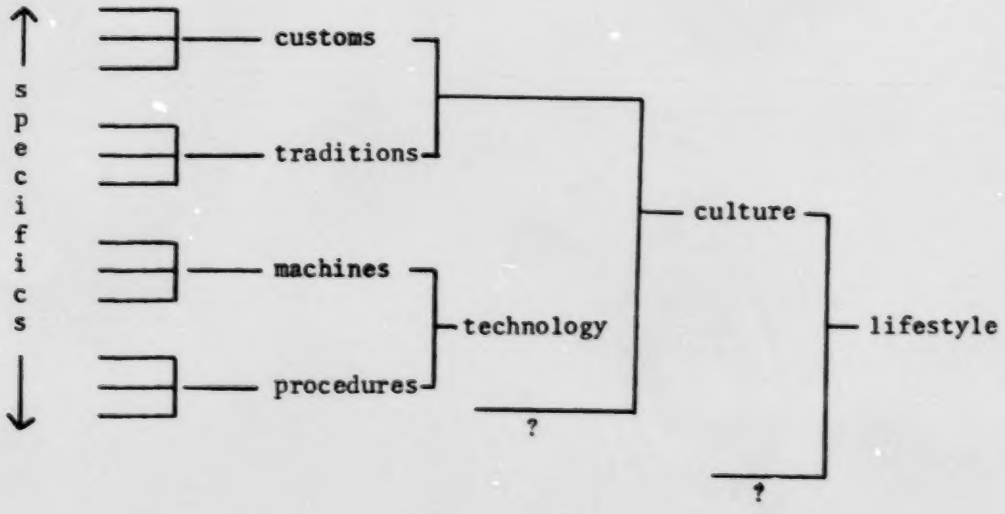
> On a map mark the most important centres of manufacture in (i) North Western Europe. . .
>
> Discuss several of the factors that explain the heavy concentration of manufacturing in these three areas of the world. . . (5-3, pp.134-5)

We might now try to reconstruct the cognitive structure of the grade 10 student of the 1950's who had learned what seemed to be intended in these outlines. In his encounter with "culture", the student would have developed a knowledge structure which can be schematized by the diagram shown below; in essence, it consists of instances of things that exemplify the culture of a particular European country.



It would seem likely that if the term was used at all by the teacher, it was not given criterial definition, but rather exemplified by the instances cited. A similar, separate diagram could be constructed for technology.

When we try to piece together the knowledge structure implied by the 1977 statement, we arrive at a diagram of the sort shown below.



We do not know what specifics are intended, but we do know that "machines" and "processes" are seen as separate components of "technology", that "customs" are separated from "traditions", and that "culture" comprises "technology", "customs", "traditions" and perhaps other unspecified things. Since the guideline does not offer a definition of "lifestyle", we have to have recourse to the Geography guideline of the same period (7-13, p.18), which indicates that "culture" is a component of "lifestyle", giving the two concepts the relationship shown in the diagram.

As for a description of the difference between these two treatments, we could say that the 1952 guideline presents low order concepts, treated somewhat in isolation, and essentially by exemplification; the 1977 guideline, on the other hand, presents a set of linked concepts, each of which is defined in terms of its predecessor, and hence is more complex in structure (has more defining criterial attributes). To put this another way, any precise treatment of the concept of "lifestyle" would require precise treatment of the concepts appearing before it in a sequence.

Not only is there a considerable expectation in respect to the complexity of the concepts that students will use, but it is evidently also the expectation that these concepts will be put together in complex, logical structures. By way of comparison, we might note that the "generalization" the student of the early 1950's might have made in respect to "culture" might be something like:

Important instances of the culture of _____ (a named country) are X (a famous building), Y (a piece of art), and Z (a national hero).

And even in the second example cited, the generalization offered in no way approaches the logical complexity of the two instances cited from the 1977 document.

Although we have selected a particular example for analysis, our contention would be that the tendency we have described (for the inclusion of advanced concepts in propositions with complex logical structure) is characteristic of the social sciences. When we look at the Geography guideline, for example, we find under the Core Content section of "Southern Continents" (7-13, p.14) the expectation that students should develop an understanding of "the importance of culture and technology in the different ways in which people make use of similar environments to meet their needs". In this instance, "culture" and "technology" are linked to the concept of "needs". This latter concept is again one which did not appear in the guidelines of the 50's, and which--from a psychologist's perspective at least--has an extremely complex structure; indeed, to do anything very productive in the way of correlating needs with other variables, one would have to resort to a needs hierarchy (to get even an ordinal scale), a relatively complex conceptual scheme. Other complex concepts that figure in the "understandings" geography students are expected to attain include "political systems", "economic development", "social development" (7-13, p.33), "human characteristics" (7-13, p.23), resources and various derivatives, industrialization, technological change (7-13, p.24), ecosystems (7-13, p.14), urbanization, resource exploitation (7-13, p.15), ways of life (7-13, p.32), access to opportunity (7-13, p.33), and so on.

Perhaps one final effort will convey the complexity of the thinking that is suggested by such outcomes. In the preamble to the course on Southern Continents, it is suggested that:

> These landscapes invite examination of human responses to similar conditions in widely separated places where the inhabitants are influenced by different cultural backgrounds and have different levels of social and technological development. (7-13, p.14)

In order to accept the invitation to gather data sufficient to determine the nature of the relationship between the factors cited, one would have to establish a framework (table) sufficiently complex in structure to show the variation in "human responses" in places which differ in (a) cultural backgrounds, (b) levels of social development, and (c) levels of technological development. This clearly calls for a four-dimensional table or its logical equivalent, and this quite apart from developing appropriate scales or measures for the concepts involved (e.g., the level of social development in a particular place).

One could probably make a similar argument for Science, although the case would be far less dramatic. A comparison of the treatment of concepts in mandatory topics indicates that what are taken to be critical aspects of the natural and physical environment are being subjected to a higher level of conceptualization than was the case in the early 1950 documents. Physical Science was scarcely mentioned at that time, and the student would have had a very limited set of concepts with which to come to grips intellectually with the physical environment.

Turning to the second aspect of our comparison, we earlier outlined in some detail what was deemed to be an erratic but discernible trend toward expecting at least the beginnings of knowledge <u>about</u> a discipline. As may be recalled, this was exemplified most clearly, although to a limited degree, in the Science and English guidelines. We make no further comment on this matter here.

Finally, there has been a discernible trend toward expectations that students will acquire knowledge of the procedures or strategies used in complex intellectual performance in the various disciplines. In the early

1950's, only the Mathematics guideline offered a "plan" for problem solving that was to be explicitly taught to students (5-3, p.142). English guidelines of that period outlined what could constitute a strategy for paragraph writing (5-3, p.42), but it was not clear whether this was for the guidance of the teacher or the pupil. The Intermediate Science guideline described a procedure for "straight thinking" in its statement of aims (5-3, p.169); curiously, its section on "The Scientific Method" suggests only "the testing of beliefs by observation, experimentation, and disciplined reasoning" (5-3, p.207).

All the major guidelines today offer a list of skills, arranged in order, which could constitute the basis of a problem solving strategy. In the History guideline, this list appears under the title "Implementing the Unit in the Classroom" (7-9, p.17), and in Geography as a set of "individual research skills" (7-13, p.46). The Science guideline includes several such lists (e.g., 7-18, p.50), and the Mathematics guideline, at least two.

Despite some ambiguity as to who the intended audience is, the case can plausibly be made that students are to be explicitly taught these lists as a set of steps, a procedure or strategy, for attacking a complex problem (one converts a skills list to a "strategy" by changing participles to verbs, for example by converting "identifying the problem" to "identify the problem") in Science, Mathematics, Geography and (marginally) in English. In the Science guideline, for example, it is proposed that "students should use the following well established intellectual processes in the learning and doing of science" (list follows); this statement, coupled with a later assertion that students should "understand the design of experiments" (7-18, p.66) suggests that the strategy is to be taught explicitly. The Mathematics guideline removes any

doubt about its intentions; in the Level 3 - Grade 9 Mathematics "Notes for Teachers" it indicates as a suggested procedure "Developing a strategy for solving problems", and goes on to describe the steps involved. Similarly, the Skill Development in Geography document (7-17) offers a "how to research your essay, report or project" model, and then proceeds to a "critical thinking/moral reasoning" model with a considerable number of interrelated steps. A cursory examination of all these models suggests, as expected, that they reflect the information processing conception of complex intellectual performance to the point where their component skills could be subsumed under the FORCN scheme.

When a student becomes conscious of the procedures he is using, gives them names, and uses them as a guide, he may then be said to have reached a first level of reflection about his problem solving performance. The English guideline goes so far as to propose a second level of reflection when it suggests that the student should come to "recognize the role that knowledge, logic, intuition and feeling play in the process of thinking or problem solving" (7-7, p.10).

In concluding this section, we will comment on the "breadth" implications of the preceding analysis. Briefly, we could claim that the knowledge category has been extended in recent guidelines in these three aspects:

(a) knowledge about the discipline seems a distinguishable element not present at the beginning of the period to any appreciable degree;

(b) know how (knowledge of procedure) appears to be much more in evidence in relation to complex intellectual performance;

(c) more "complex" or "higher order" concepts are appearing in the Social Science (and, possibly, other) guidelines. This would constitute a breadth change, however, only if our outcome category system distinguishes types of concept by level of complexity.

Trends in the Delineation of the Contexts for Educational Outcomes

Perhaps we should begin this section by recalling that the problem of context arises from the way we envisage the educated person. For example, if we think about the ideal product of the Language Arts program, we might envisage this person, at some point in time, communicating his ideas clearly to other people. But when we try to convert our image to statements of aims or objectives, it seems that we focus first on the type of educable outcome (communication skill in this instance), and then on the context in which the skill is to be in evidence (in the presence of, or in interaction with, individuals, or groups of people, in our example). Obviously, the question of which contexts communication skills are to be in evidence in is an important one for the school, for it is the basic premise of schooling (or perhaps its chief article of faith) that the training it provides influences behavior beyond its walls.

This basic paradigm for objectives writing is in evidence in all the documents for the period under study. If we take the 1951 Intermediate English guideline, for example, we find the following sequence of statements:

- English is vital to the general development of the people and is, therefore, the direct concern of every teacher.

- adequate skill in the use of English is central to progress in all subjects of the curriculum, and of meeting the practical demands of everyday life, and in fulfilling the duties of citizenship in a democracy. (5-3, p.23)

Reading on, we find somewhat further along that:

- the main objectives of the study of literature are the cultivation of a taste for good reading. (5-3, p.26)

And still further:

- the purpose of _____ (a type of activity) is primarily growth and development of the people's ability to conduct a meeting... (5-3, p.45)

In the first of these statements, a very global outcome (general development) is described, but no context is indicated. In the second statement, a general class of outcomes (skill) is described in an equally global context (everyday life). In the third statement, a more limited outcome is specified (the acquisition of good taste) and the context is evidently "written materials available in the culture". In the fourth example, the skill and context are inseparable, but both appear to be at a much lower order of generality than with the preceding cases (the actual type of meetings intended is specified in the guideline passage in question).

As we progress through objective statements in the guideline, or through levels of linked statements, what we tend to find is the progressive elaboration or specification of objectives along two dimensions: increasing specificity of outcome types, and increasing specificity of contexts. The progressive delineation of contexts seems to move from the global (real life, everyday life, "experiences"), to the near global (cultural heritage, "media", interpreted broadly), at which point contexts appear to divide into: identifiable groups (the individual, intimate groups, the family, other small groups, the classroom group, the community, society and humanity in general) as one main grouping; and the natural and physical environment as another.

Beyond that, any number of subdivisions are possible. For example, among the various social contexts employed in different guidelines are institutions, human activities (e.g., kinds of work), the components of culture, and so on; needless to say, the natural and physical environments are capable of similar elaboration, as would occur in the multiple levels of a biological classification scheme, or in the treatment of physics contexts at the microscopic, terrestrial, and macroscopic scale. At further levels of analysis, it is possible to think about something like "cultural groups" in terms of a whole range of subcategories of increasing complexity, from specific events and places to such complex notions as "linguistic types".

Perhaps all that this shows is that the classification of knowledge by context (i.e., by what the knowledge is about) is amenable to infinite elaboration, particularly when, as in education, the intended context may in fact be the relationship between two or more "simple" contexts. This is equally true of affective outcomes, for, to cite an earlier example, one can have beliefs about groups, and about individuals, but also about the most appropriate relationship between groups and individuals.

With this morose preamble, we can now come back to the problem of defining delineated breadth by some kind of outcomes X contexts matrix. While one could do this in theory by creating a sufficiently detailed contexts classification scheme to incorporate all the distinctions made in the guidelines, and their supporting materials, the practical task of doing this would be simply enormous. In view of the fact that some of the contexts indicated (particularly those in the illustrated geography and history examples cited earlier) deal with knowledge or understanding of relationships between three or more first order contexts, what we would require if we made our comparison

of breadth at the individual lesson plan level would be an outcomes X contexts matrix of up to a dozen or more dimensions.* While someone with ample time might wish to undertake such a comparison, we will have to limit ourselves to such general observations on context delineation that seem most relevant to the probable uses of the outcomes of the present study.

First, the general weight of evidence seems to support the notion that the number of intended contexts has increased marginally in the long term. This judgment is based on the following considerations:

(a) Where guidelines are available at approximately the same level of specificity of detail, there would appear to be no discernible change in the range of designated contexts for most kinds of outcomes. The 1977 Intermediate Mathematics document cites culture, the student's world, other disciplines, industry, commerce, sports, recreation, groups and the home as appropriate contexts for the use of mathematical knowledge and "simple skills". The 1951 Intermediate document mentions social life, economic life, other subjects, natural resources, and throws in a whole batch of specifics in some instances (e.g., 5-3, p.155). Similar comparability could be claimed for the contexts intended for most English outcomes; as far as

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*Without wishing to complicate matters further, there is also the problem that objectives statements, or statements of "topics" that have implications for objectives, are as much in need of interpretation on the "type of context" side as they are on the "type of outcome" side. For example, it was common for the early Arithmetic guidelines to enter under the heading "Practical Problems Arising in the Ordinary Life of Pupils" such entries as "Improving the School Grounds". While it is clear that the intended outcome is the development or employment of a complex skill (problem solving in particular), it is not clear whether the context should be classified as a type of man-made environment, or as a variety of human activities (e.g., dealing with money, creating spatial patterns, or whatever).

Science is concerned, more contexts are cited in the new documents simply because there are more "topics". There is not yet sufficient detail for contemporary Geography and History guidelines to make a judgment (those appearing in the early 1970's had very little detail, and the support materials for these two disciplines are not yet completely available).

(b) Contemporary guidelines continue to have a high proportion of contextless objectives, one reason being that they have a higher number of aims and objectives statements. However, as has been noted in an earlier section, the present formulations of complex intellectual performance, in contrast to those appearing earlier, are of such a nature as to be applicable to a broader range of contexts (earlier, this claim was documented for Mathematics problem solving models of the 1950's and 1970's, and passing comments of the same sort were made with respect to models during other disciplines). The lack of obvious limitation in their formulation, coupled with the conception of the learner on which they are based, suggests very strongly that their authors intend them to be applied across all possible contexts.

(c) (To reiterate the point made in our analysis of intended knowledge outcomes), the social sciences in particular construe the contexts (the objects of knowledge, and some affective states) more frequently in terms of complex interrelationships between simple contexts (which constitute new contexts in their own right), than was the case twenty-five years ago. A trend appears to be

more clearly established in this case, the origins of which predate the period in question.

A Summary Statement on Trends in Breadth

When all the foregoing observations are put together, one is pushed toward the conclusion that delineated breadth has increased over the period in question. Even if we were to designate the context issue a "draw", and contend that changes in knowledge and affect lie more in the direction of complexity than quantity, there is still the fact that the number of delineated skill objectives has increased at both the simple and complex levels.

What appears to be a more important conclusion, however, is that "complexity" keeps reappearing as an indicator of trends.

Trends in Relative Emphasis

Some of the things that need to be said on this matter have already been outlined under "context" considerations. For example, no precise determination of relative emphasis is possible at the finest level of detail provided by guideline statements, the reason being that the determination of relative frequencies requires the prior construction of a multi-dimensional matrix within which these frequencies can be determined.

Nonetheless, some comments can be made by aggregating over segments of the hypothesized matrix. In the first place, if one were to take frequency of mention, or lines of space, or degree of elaboration as a measure of relative emphasis (the only alternative when a completed matrix is lacking), one would pick up a large number of changes in emphasis at different levels

of generality. For example, it seems that some contexts become important because of some currently perceived problem, are temporarily magnified in importance, and then recede to find a more permanent place in statements of intended outcomes. In other instances, one concern is simply replaced by another, and contexts modified accordingly. In still other instances, there are long term changes in relatively minor aspects of the image of the educated person.

As a minor instance of the latter kind, the guidelines of the forties and fifties gave more emphasis to letter writing, while current guidelines give more emphasis to personal writing. Similarly, reading to other people was once deemed a more important activity than it is today. As an instance of problem centered enhancement of contexts, it would seem that there was a considerable concern in the early guidelines with what might be termed "personal hygiene" (cleanliness), while today there is more emphasis on drug and alcohol related problems. In Science, one type of man-environment concern (conservation of resources) has been transformed into variants involving the same type of context (pollution, energy crisis).

A more general concern in respect to emphases, and this is primarily a context emphasis, has to do with our earlier reflection that the late sixties and early seventies seemed to mark a high point in the promulgation of the active-good philosophy of the child. According to our global analysis, the 1973 statement contained a much higher proportion of individual-oriented as opposed to (some would say to the neglect of) other-person or society-oriented objectives. An important, current question is whether there has been any change in this situation.

Perhaps the real test of any trend would be found in a re-statement of the Ministry's global goals for public education. Since this is not available, and since any "trends" would have to be found in the new Intermediate guidelines, we have undertaken to compare these with the guidelines for the same subjects appearing in the early seventies. While the latter guidelines appeared before the 1973 statement, and hence are not ideal as far as this comparison is concerned, they were written during the time that the 1973 goal statement was being discussed by Ministry personnel, and presumably reflect its global views as they are applied to a particular discipline.

We believe that the foreshadowing of a possible trend is indicated most clearly in the changes in the aims for Intermediate Division History between these two points in time. It is undoubtedly not an accident that the only significant change in these statements, apart from the standard gesture toward women's contributions, was the expansion of a single objective:

- To develop an understanding of Canadian identity, social goals and the multicultural traditions of the peoples that now share a common national experience.

which appeared in second place, to the following first named three objectives:

- To develop an understanding of the Canadian identity and social goals
- To develop an understanding of the roots of Canada's cultural heritage
- To develop a reasoned pride in Canada.

This seems to us to be an obvious attempt to enhance the importance of the social context.

A comparison of the English guidelines is difficult because of the skimpyness of the 1969 version, which contained no specific set of objectives.

However, it did enunciate as its central purpose that of addressing itself to the question "Which learning situations will best develop the receptive and the expressive abilities of students as individuals?" The rest of the document seems to be an elaboration of this theme and contains, as far as we can discern, no reference to social goals or Canadian society. This is clearly changed in the general aims for the 1977 Intermediate document, the first statement of which presents an interesting compromise between socially and individually oriented objectives:

> To encourage the use of language as a means by which the individual understands personal and societal goals and acquires such qualities as initiative, responsibility, decisiveness, self discipline, perceptions, and integrity in the pursuit of those goals.

The guideline continues in this vein in its second objective:

> To nurture the student's growth and awareness and the appreciation of both personal identity and the diverse values of people as reflected in Canada's multicultural society in literature.

How deeply the guideline writers internalized these social obligations is not clear, for the vast part of the remaining document, references to Canadian literature apart, appear to be either contextless or individual-referenced.

The Science guideline also appears to have made some effort in this connection. As was pointed out earlier, the 1972 Science guideline is extremely individual oriented, built on a substantial base of individual developmental psychology. As far as we can determine, its closest approach to anything like social responsibility occurs in the paragraph:

> A student does alter his world, however, his actions mold and shape his community, he is responsible in the present and will be responsible for the future. How better can he prepare than by having some share in determining his curriculum?

The present Science guideline proceeds beyond this in its "aims", stating that the student should have an opportunity to relate science to career opportunities and other areas in which science plays a role, and "to cultivate an active concern regarding such issues as the wise use of energy, the preservation of an unpolluted environment, the care of plants and animals, and the dignified application of science to societal problems" (7-18, p.4a). In a later section on "Appreciating" objectives, these explanations are reiterated, and local boards are given the option of developing units on the wise use of energy and other matters of local concern.

The most general statement of aims in the 1977 Geography document is heavily loaded with statements that relate first order contexts, something that has virtually become the trademark of contemporary Geography guidelines. Consequently, references to Canadians and Canada are limited to aims: the student should grow toward:

- knowledge of the province and the country, and the response of Canadians to the opportunities and constraints presented by the Canadian expanse; (7-13, p.3)

- recognition of individual and collective responsibility in the use of human and natural resources; (7-13, p.4)

The course on Canada gives some emphasis to native people, the multicultural nature of our society, and the availability of opportunities in Canada, all of which are evidently in service of the objective: "students must acquire a knowledge of Canada and pride in their country" (7-13, p.23).

If we took all these statements together, we might say that the heavy focus on the individual that was evident in guidelines up to the mid seventies (in certain respects, the individual was the context or focus for knowledge and attitudes) appears to have been moderated to the point where students are to have an understanding of, and pride in, Canada, but has by no means returned

to the 1937 position which highlighted social responsibility and a host of supporting knowledges and traits.

The Trend toward Complexity in Expected Performance

Although claims can be made for increased breadth, the most noticeable trend over the period in question has been the greater complexity of expected performance. While a transition from a concern with traditional "literacy" skills to a concern for more complex intellectual skills was apparent in the comparisons of the 1937 and 1973 statements of educational goals, a more precise delineation of trends in complexity has emerged from our long term analysis of subject areas. It will be appropriate to summarize these changes here:

First, as far as complexity of intellectual performance is concerned, the change is as much one of kind (or quality) as it is of emphasis as we have defined it (i.e., of the relative frequency of occurrence of an objective of a given category). Today's "problem solver", to use the generic term, is not only to display a kind of intellectual skill that draws together more individual component skills, but he is also to be more aware of the process he is using, and possibly even have an insight into the limitations of rational processes (e.g., know the role of emotion in thinking).

The trend in expected affective performance is more clearly one of relative emphasis. Since decision making is the most general type of problem solving in the real world, and calls into play affective states (values) with the most complex cognitive links, it is not surprising that construed values have replaced the more receptively acquired attitudes of the 1950 guidelines. While the active-receptive distinction hints at a difference in

kind as well, we have shown earlier that it is also desirable in terms of knowledge links.

Finally, today's problem solver--with his more complex repertoire of skills and his more sophisticated attendant affective states--is seen to be informed by more complex kinds of concepts (and knowledge structures in general). This greater sophistication in knowledge--which can be construed either as a change of emphasis or of kind--is brought to bear when he establishes frameworks for the problematic situations he encounters in real life, or in their school simulations.

In summary, then, the long term trend has been partly one of differences in emphasis and partly one of differences in kind, within a gradually expanding breadth. Progressively the expectation has been for a more comprehensive and fully rationalized form of complex intellectual performance, accompanied by a more sophisticated (cognition linked) affective behavior, in contexts which are conceived by the educated person in more sophisticated terms.

F: THE BREADTH AND STABILITY OF CURRENT GUIDELINE OBJECTIVES

In the analysis of the breadth of global conceptions, it was concluded that by 1973 the image of the intelligent, self-directed individual had begun to emerge. Subsequent analysis by subject areas suggested that the appearance of this image was consistent with a long-term increase in expectations for complex intellectual and emotional functioning in a wide variety of more highly conceptualized contexts.

When the "back to the basics" rhetoric began to appear on the Ontario educational scene, there was some fear that the thrust toward complex functioning would be reversed in a return to some simplistic interpretation of the "three R's". This fear was not unfounded, since most of the examples cited in the public debates, as well as the "basic literacy" tests that were beginning to be administered in the United States, seemed to be jettisoning logical-quantitative problem solving in favor of correct punctuation, spelling and grammar, and an understanding of the significant concepts in which the real life contexts can be analyzed in favor of a set of "essential facts".

With six post-"back-to-the-basics" guidelines now before us, we are in a position to describe what actually happened in respect to the narrowing or broadening of objectives. It is true that the first of these documents (The Formative Years) presented a terse, "no nonsense" set of mandatory outcomes, suggestively designated "bullets", and that the sets of outcomes envisaged for particular subjects seemed in sharp contrast to the liberal images of EPJD. As far as mathematics was concerned, for example, EPJD's declaration that mathematics had to do with building models of real life

problematic situations (7-3, p.61) was replaced by a list of fairly traditional computational skills (7-1, pp.11-12).

A careful reading of this 1975 document, however, makes it clear that its authors had not really expanded complex performance after all, because they had included a section on "Values" and "Decision Making". When the History guideline appeared, it was evident that its authors, possibly influenced by the position taken by influential members of the Ontario Association of History Teachers, made no pretense of calling for objectives that fit the layman's conception of the essential content of history (set of facts), but presented instead a proposed curriculum that involves, among other things, applying very sophisticated modes of thought to the analysis of contemporary issues. The Mathematics guideline had a core content section, but it turned out to allow a considerable degree of local choice, and was prefaced by a policy statement that, in effect, declared applications and real-life problem solving the major objectives of the Mathematics program. In what appear to be the mandatory objectives in the English guideline are actually a comprehensive set of skills, first among which are a broadly conceived set of "thinking" skills.

The Intermediate Geography guideline appeared to have a limited set of objectives at first sight, particularly in that its core skill objectives consisted primarily of traditional map skills. However, when one analyzes the core knowledge objectives, as we have done in the previous section, we see that they involve very advanced levels of concept use. Moreover, within a few months of the appearance of this document, Ministry-sponsored implementation plans began to appear which required local boards to implement the broad Division level aims of the guideline as well (7-25).

Perhaps the most revealing instance lies in the remarkable set of events that surrounded the Science guideline. When the first draft appeared, the policy section contained a set of aims of a fairly general sort; the vast bulk of the material was given to optional lesson plans which, on first inspection at least, seemed much more content oriented than material should be that reflected the aims. As has been mentioned before, yet another part of the document contained a very detailed set of objectives, again offered as "advice". But within a few months of its release, and at least partly as a result of reactions from Science teachers, the guideline has designated as "policy" what the author believes to be the most sophisticated set of cognitive and affective objectives ever to appear in a Ministry guideline (7-18, pp.40-77).

There is left to explain how a round of guideline writing that was supposed to be marked by a return to the layman's conception of the traditional competencies has actually moved in completely the opposite direction. One explanation for this lies in an analysis of the nature of what it takes to be support for a return to the traditional competencies.

> It is the author's contention that neither the political spokesmen for the movement, nor the people they represent, have a view of the educated person that is significantly different from that advocated in the professional literature. The man on the street has been incessantly bombarded with the image of the intelligently self-directed person--it, or its antithesis, is the mainstay of popular fiction and television--to the point that he has internalized it as a dominant value of our contemporary life style. Evidence of this comes from the virtually countless studies of the aims of education conducted in this province in the past decade; when asked to formulate or choose among objectives for the school, laymen invariably put at the top of the list aspects of the ability to deal with the practical problems of life from a consistent set of values; the so-called "basic skills" appearing in current "back to the basics" achievement tests in mathematics have tended to receive honourable mention at best.

> Public support for the "back to the basics" movement does not derive, then, from a different conception of what it means to be educated. Rather, it stems from the layman's inability to sustain confidence in this image in the face of frustration and short term failure. The layman, whether he be citizen or employer, has been given very little data over the past decade to indicate growth in intelligent self-direction on the part of the school's graduates. What he has seen is a destructive and short-lived rebellion against tradition and the establishment, followed by data which show that performance in some of the so-called "basic skills" is declining. Unable to sustain his belief without positive external reinforcement, and unable to analyze out the achievable and educable components of the shared image, the layman quite naturally focusses his attention on the most easily observed indices of performance, and argues that at least these deficiencies should be overcome....
>
> It is an easy and perhaps inevitable next step to rationalize the substituted criteria and to imagine that they indeed have something to do with the ideal. Reference to narrowly conceived testing objectives as "basic skills" or "life skills" or even "survival skills" shows how far this process has already proceeded. No plausible analysis or data has been presented to show how the outcomes demanded in these lists contribute to the behaviors to be exhibited by the intelligently self-directed person. (7-22, pp. 2-3)

Our explanation of the unexpected outcome is that the people who wrote the guidelines, a large proportion of them teachers selected for their forward-looking views, have more deeply incorporated the conception of the intelligently self-directed individual into their thinking, and are much better prepared than laymen to take the long view in respect to progress. In declaring that the ability to solve problems is the "ultimate, but illusive goal of education" (7-14, p.12), the authors of the new Mathematics guideline are refffirming their confidence in a shared conception of the mathematically educated person, a reaffirmation which has also recently been made by two of the most influential groups of mathematics educators in North America (7-20, 7-21).

The foregoing speaks to the question of stability. The emerging image of the educated person has been taking shape in the professional psyche for

almost half a century; it is grounded on conceptions of the learner's psychological and moral nature. Changes in the image can be discerned over the long run, but they are in a direction, rather than being random, and in a direction that was set when the "liberal" image of the 1937 document was formulated. We have no reason to believe that there will be any significant "narrowing" of the image in the immediate future.

G: IMPLICATIONS OF THE PRESENT STUDY

The implications of this study are of three kinds. The first are for those who take guideline aims and objectives statements as the starting point for their own inquiries. The second set of implications has to do with possible improvements in the process of writing guidelines aims and objectives. The third set of implications is for anyone who is considering policies that relate to the scope of current aims and objectives (CODE is the obvious referent here).

Guideline Aims and Objectives as Starting Points for Sustained Inquiry

Efforts to use guideline objectives statements as the starting point for continued inquiry can be arranged in order of sophistication, somewhat as follows:

(a) teachers, who, on professional development days, are obliged to try to make sense of such lists;

(b) local curriculum development committees, school staffs, and writers for publishing companies who try to develop course outlines, school programs, and commercial material respectively from such statements;

(c) research and development personnel, including OISE academics, who try to use guideline statements for selecting or devising test items, or for determining the degree of guideline implementation.

All such groups seem to assume that the guideline statements constitute a complete set, and that the meaning of any particular statement can be had

by reading it. On the basis of our previous analysis, however, we would argue to the contrary that the particular set of statements appearing in the guideline are simply a subset of the total statements that might have been generated from the author's organizing framework, and that the selection of these particular items may be more a matter of "error" than of the consistent application of a rule. Second, our attempts to "plot" objectives on an outcome category system suggests that the literal meaning of most of the complex objectives is in considerable doubt, and that one can only give meaning to a collection of such statements by using context clues and some well-defined conversion rule.

Essential to the interpretation of a set of guideline objectives is the retrieval of the framework (category system) from which they were generated; as in the case of ordinary reading, such frameworks constitute the interpretive device through which the meaning of individual statements is recovered. Sometimes an author's classification system is quite visible, as in the 1937 statement. When it is not clear, or non-existent, the guideline interpreter has no option but to construct a category system himself which is capable of assimilating the set of objective statements and giving them a consistent interpretation within that framework. As was pointed out in Part B, the development of a category system that makes sense to users (and if it doesn't it is of no use to them), will require some directed assistance that forces the user to reflect on his conception of the educated person, of the discipline in question, and of the dynamics of learning.

This points out where the real tragedy of objectives incoherence occurs. The author has had direct or indirect contact with scores of local curriculum committees; unless sustained help is provided in making sense of guideline

objectives--by projecting them on a self-created outcome category system--these groups quickly withdraw from any considering of objectives, and direct almost their entire effort to what they regard as the main business of curriculum development--writing content outlines that fit the general headings provided by the Ministry. But since they do not have a conceptual structure which links image derived objectives to practice, they have no recourse but to reiterate existing practice, and a potentially valuable function of the guideline is lost.

The Improvement of Aims and Objectives Writing in Guidelines

It seems clear that the proliferation of aims and objectives statements, which now consume up to 30% of a guideline (7-9), should not to unchecked. Rather, some attempt should be made to proceed with the task in a more orderly way, the intention being to produce objectives lists that are useful to the various groups that have to deal with them. If the matter is approached from a "frameworks" point of view, it would seem plausible to identify three main stages in the delineation of objectives. The first stage would be to articulate as clearly as possible the prevailing conception of the educated person, and to provide the primary framework for its progressive conversion into objectives statements. Clearly this is a task for the central Ministry and would involve:

(a) Describing the chief types of outcomes intended to that level of specification which, but not beyond which, the different subject area groups could relate. In other words, it would be appropriate for the statement at this level to indicate the kinds of intellectual performance the Ministry has in mind

(e.g., the use of quantitative algorithms to reduce data) but not to speak specifically about a variant of that skill that might appear in a particular discipline (e.g., converting fractions to decimals).

(b) Identify the main contexts in which it expects these outcomes to be exhibited. Again, these should be specified in a "general" (not discipline specific) way.

(c) Give some indication of the level of performance that is expected by the end of each Division, across all disciplines. It would be possible, for example, to stipulate that students (on the average) would be expected to have mastered the four basic one-stage algorithms by the end of the junior division, 2-stage algorithms by the end of the senior elementary grades, 4-stage algorithms by the end of grade 10, and algorithms of up to 8 stages at the end of grade 12. With this understanding, it would then be inappropriate for the science or geography guideline to call for the use of an algorithm that is clearly beyond the student's performance level at that time.

At a second stage, the Ministry's general goals might be elaborated by an interdisciplinary group to convert them to sets of aims which specify the primary responsibilities of each subject area. A discipline's responsibility would be "primary", in respect to a knowledge objective, if it was responsible for giving the criterial attributes of the concept involved, a precise statement of the generalization intended, or the model to be employed for the phenomenon in question. Its responsibility for skill would be "primary" when it undertook the articulation and transmission of the know-how that underlies

the skill. The determination of each discipline's primary responsibilities could be made roughly by analyzing what the discipline brings that is unique to the "general" contexts specified by the Ministry.

Such a delineation in no way presupposes that the student's school experiences should be compartmentalized under a set of disjoint outcomes. One discipline may have responsibility for the clear definition of a concept (e.g., science for "energy"), while other disciplines (e.g., history, and geography in this case) would use the concept in their own inquiries and explanations). Without such a division we will have a continuation of the present situation in which teachers in the social sciences encourage students to case terms, allegedly in the pursuit of very advanced forms of inquiry, for which they have no precise meaning beyond correct use in context. The situation is similar in respect to skills; everybody proclaims complex intellectual performance as one of its intended objectives, and every group tends to cite the same types as being desirable outcomes, but there is no division of labor and no one is held accountable for improving performance.

The third level of specification is that required by those who would create objectives-linked instruction materials, teaching methods, and pupil activities. These groups would include publishers, local curriculum committees, and (most important) teachers; even though the latter group has been predominantly "activity" rather than "objectives" oriented, this is surely not an imbalance that one would want to see continued, at least if we are to take our alleged aims and objectives seriously. In an earlier analysis we argued that teachers do not link an objectives language very extensively to their base lesson planning schemes. While they are not likely to relate general objectives to their immediate plans for action, properly specified

and exemplified objectives could be linked progressively by the teacher's existing course outlines and lesson plans, an implementation procedure that is suggested in some of the emerging plans based on the "levels of usage" literature (7-23).

It seems to us that publishers are equally in need of the products of this level of objective delineation. Without it, or with only existing objectives statements, the writers of commercial texts are in precisely the same position as local teacher groups, and proceed in precisely the same way. A competent textbook writer may capture the essence of the best contemporary organizations of content, and an inventive one may improve on them a bit; but textbook writers perceive only vaguely the intended outcomes (objectives) of using the text, and even the knowledge objectives inherent in their topics are not clearly envisaged in our experience. Textbooks are permanent, significant features of public education, and the craft of textbook writing is desperately in need of reform.

Potential Implications for the CODE Studies

The author is not fully aware of the terms of reference for CODE, nor of the framework it brings to bear on its work. On the other hand, it would seem inconceivable that the Commission could not be concerned with the effect of any policy or changes it proposes on the degree to which the aims and objectives of education in this province are achieved.

For almost half a century, the Ministry of Education of Ontario has expounded a liberal view of the educated man; this view, which was expressed in one form in 1937, has been reinforced and broadened in all significant objectives statements since that time. There appears to be no warrant

whatsoever for assuming that educators or the general public show any signs of abandoning this image, or that any policies could be justified that are predicated on such an assumption.

In view of the fact that schools exist to bring, or assist in bringing, this image to fruition, one might argue that the superordinate problem facing Ontario education today is not declining enrolment, but the fact that these liberal images have never been realized in practice to any appreciable degree. Living and Learning acknowledged this in a very tactful way when it said, in relation to the 1937 statement, that there were substantial difficulties standing in the way of "getting the program into anything like general practice". More recently, in reflecting on the degree to which the allegedly central objectives of mathematics education (real-life problem solving) is actually being attained, the author concluded

> The time-honoured complaint that the majority of mathematics students have great difficulty in problems not specifically rehearsed in class, and identified with such rehearsals in test situations, is abundantly clear in current data on problem solving performance in Ontario elementary and secondary schools. And when non-textbook-like questions of a logical or quantitative nature are used, the results are even worse, with the majority of students scoring only marginally above chance level. (7-22, p.6)

The argument could be made that it is precisely the qualities reflected in the emerging image of the educated person that will be critical in a future in which (a) an increasingly smaller proportion of the population will be supporting an increasingly larger proportion, and (b) Canadian workers face a general challenge to improve their productivity, hence their competitiveness in world markets. While the qualities necessary to manage these tasks have not been clearly identified, nor is their development uniquely the responsibility of the school, one would surely not go far wrong

in believing that these qualities have something to do with complex intellectual performance, for which the school must provide the general base from which specialties are built.

Two "considerations" arise which should be of interest to those considering the size and deployment of teaching staff. First, the author has argued at some length elsewhere (7-22), that the attainment of an objective of the complexity of "real life problem solving" must be envisaged as a long-range process in which teachers progressively acquire procedural skills that they do not now possess. A first contention would be that any systematic progress toward the liberal objectives inherent in our shared image of the educated person will require substantial amounts of teacher training (7-22, pp.18-19).

Second, one of the insights to come out of the Institute's Major Thrust in Elementary School Thinking (7-6) was the dramatic difference in the attainment of intellectual skill outcomes that could be achieved when working with individual children or small groups, as opposed to working with large groups. At one point, the major investigators had a rule-of-thumb that one should multiply the mental age by which a child could attain a given level of intellectual performance under individual instruction by a factor of two to set realistic expectations for traditional group instruction. The fact that complex performance of any kind requires a large amount of individual attention has never seemed anything but obvious in the field of athletics, musical performance, or literary achievement. The inconclusive research on achievement and class size has no bearing on this argument, because to this point in time teachers have not had the procedural knowledge that must be articulated and used as the basis of close monitoring if individual or small group instruction is to have any advantage.

In summary, the possibilities that Ontario might vastly accelerate its progress toward the realization of the images that define the main purposes of its schools through (i) a substantial investment in teacher retraining and (ii) the creation of more opportunities for intensive individual instruction should figure significantly in the thinking of those who are currently discussing pupil-teacher ratios and the general deployment of the professional teaching staff of this province.

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APPENDIX A

(1) 1937 Statement of Aims

(2) New Dimensions Statement

(3) 1975 Statement from EPJD

Goals of Education: Providing an equal opportunity for all

The following statement on the Goals of Education in Ontario has been prepared as a result of extensive discussion within the Ministry of Education. If it is to be regarded as a valid statement, however, it must be accepted and supported by all members of the educational community in this province. The Ministry, therefore, welcomes comments on this expression of Goals of Education in Ontario.

Letters dealing with this matter should be addressed to:

The Deputy Minister,
Ministry of Education, Ontario,
P.O. Box 560, Postal Station F,
Toronto, Ontario M4Y 1T0

As Canadians, we accept certain values as essential to the continuing development of our society. These include respect for the individual, concern for others, the concept of social responsibility, and the acceptance of work, thought, and leisure as valid pursuits for human beings.

The goals of education in this province must continue to reflect these values. They must be stated clearly and recognized as the basis of activities in education today. A prime concern in formulating our goals must be to provide equality of educational opportunity for all.

In keeping with these basic tenets, the goals of education in Ontario are defined as follows:

- to guide individuals in attaining the self-discipline and self-direction necessary to discover and develop their abilities, interests, and aspirations;
- to lead individuals in the acquisition and pursuit of knowledge;
- to lead individuals in the development of social consciousness and a full sense of social responsibility.

A. To guide individuals in attaining the self-discipline and self-direction necessary to discover and develop their abilities, interests, and aspirations

(I) Education must make a major contribution to the intellectual, social, emotional, physical, moral, and cultural development of each individual.

(II) Each individual must be encouraged to develop such attributes as intellectual curiosity, awareness, sensitivity, perseverance and a desire for excellence.

(III) Education must respond to each individual's need to develop a positive sense of self, including a desire for competence, and continuing self-development and self-evaluation. The development of this sense of self-worth will enhance the individual's ability to understand and examine his own interests, abilities, and goals and to reassess them in the light of the need to adapt to an ever-changing environment.

B. To lead individuals in the acquisition and pursuit of knowledge

(I) Each individual should be given an opportunity to develop an appreciation of his cultural heritage, of the environment in which he lives, of art, music, and literature, of the place of mathematics and science in the world's daily work, and of the importance of commerce and industry in the life of nations.

(II) Each individual should develop skills in the processes of inquiry, analysis, synthesis, and evaluation. Students who acquire such skills will be inspired to continue learning throughout their lives.

(III) Each individual must be encouraged to acquire, to the limit of his individual physical, mental, and emotional capacities, the basic knowledge and skills needed to comprehend and express ideas through words, numbers, and other symbols.

These basic skills fall into four broad categories:

(a) the ability to comprehend ideas through reading, listening, and viewing;

(b) the ability to communicate ideas through writing, speaking, and other visual and non-verbal media;

(c) the ability to understand and employ mathematical operations and concepts;

(d) the ability to apply rational or intuitive processes to the identification, consideration, and solution of problems.

C. To lead individuals in the development of social consciousness and a full sense of social responsibility

(I) Education must prepare the individual for life in our society. Thus students should be encouraged to gain insight into the functioning of society as well as of the individual's role within it. This insight is developed not through passive learning, but through interaction with others.

(II) Education should encourage individuals to develop an appreciation of the ethics of their society and the conduct prescribed by such ethics.

(III) Education must assist individuals to develop self-respect, respect for others, and respect for law.

(IV) Education must assist individuals to gain an understanding of themselves as well as of persons belonging to social and cultural groups different from their own.

(V) Education must assist individuals to develop the skills and abilities that will enable them to take advantage of those opportunities that are open to them for a satisfying and productive life. □

INTRODUCTION

Education for Democratic Living

Two considerations must govern the framing of a programme for the elementary school. The first consideration is the kind of society in which the child lives and for which he is being prepared; the second is the nature of the child's development.

The schools of Ontario exist for the purpose of preparing children to live in a democratic society that bases its way of life upon the Christian ideal.

Such a society aims to provide the greatest possible opportunities for the self-realization, security, and happiness of every individual in it. It attempts to secure certain basic freedoms, to maintain legal justice, to achieve economic justice, and to afford the individual opportunities to participate in all decisions affecting his welfare.

From each individual a democratic society expects the finest service of which he is capable and a willingness to make sacrifices for the common welfare. It demands that he recognize and accept his responsibility to act not only in the interest of self but in the interest of all.

The citizen of a democratic state lives in a society that is constantly undergoing change. He must, therefore, be able to adjust himself to new and changing conditions, and he must have the flexibility of mind that will enable him to meet changing conditions with intelligence.

A further characteristic of a democratic society is its group organization. In order to pursue the ordinary concerns of living, people associate themselves in social groups of various forms. The family, the school class, the church congregation, the club, the circle of friends, the municipal community, workers or business associates engaged in similar pursuits, are examples of these groups; and when one speaks of a person as "a member of society", one thinks not only of his citizenship in Canada and the Commonwealth, but of his membership in such groups as well. Members of such a

society need to know how to help one another to get things done. Educators accordingly attach great importance to the development of those qualities that enable the individual "to work with other people," "to get along with others," "to act in a socially acceptable manner," "to develop a socially satisfactory personality," "to be a good citizen." Co-operation in a democratic group requires self-control, intelligent self-direction, and the ability to accept responsibility.

The habit of effective behaviour in accord with the principles of democratic living must be developed over a considerable period of time, by experience and practice, beginning early in life. It cannot be developed by coercion, but must be accepted willingly as a desirable form of conduct. Nor can it be acquired from the verbal teaching of precepts. No reliance can be placed on the study of a single textbook or the setting up of a course in "democracy" to teach the habits of democratic living. They can be learned only through meaningful social experience at the child's own age level. The programme of the school must provide these meaningful social experiences in situations that require the exercise of qualities of helpfulness, self-direction, and acceptance of responsibility—qualities that enable the individual to act constructively with others in order to get things done. The school must set up for its pupils an environment in which, through use, they may learn the social techniques, derive the attitudes and beliefs, and develop the abilities and skills that social life in a democratic society requires.

The School's Threefold Task

In order that the individual may take part successfully with others in any undertaking, he must understand the requirements of the situation, accept as his own the aims and purposes of the group, and possess or learn the skills or techniques that are necessary to perform his part of the group undertaking. Similarly, for successful social living each member of society must understand the nature of the society, accept its ideals, and master those conventions and skills commonly employed in modern social life.

The task of the school, therefore, may be regarded as threefold.

Chapter One
Values, Goals, and Objectives

The goals of an educational system reflect the values held by the community. Values may be defined as those qualities of life that the individual and/or society considers important principles of conduct and major aims of existence.

Values take on meaning for the individual when they are accepted as personal precepts. The role of the teacher is to provide the context in which the child can begin to work out a personal system of values and in which he or she has opportunities to analyse values in a societal context. The teacher should provide a consistent example of an individual who lives by a clear set of values and who respects the right of the individual to diverge from the majority opinion.

As Canadians, we accept certain values as essential to the continuing development of our society. These include respect for the individual, concern for others, the concept of social responsibility, and the acceptance of work, thought, and leisure as valid pursuits for human beings. In keeping with these basic tenets, it is the policy of the Government of Ontario that every child be granted the opportunity to develop as completely as possible in keeping with his or her talents and needs. The Government of Ontario, on behalf of the educational community and other citizens, pledges to support an education program that endeavours not only to nurture every child's growth but to provide a fuller life during the years in the Primary and Junior Divisions so that each may pursue his or her education with satisfaction and share in the life of the community with competence, integrity, and joy.

It follows that the curriculum will provide opportunities for each child, to the limits of his or her potential, to:

– *acquire the basic skills fundamental to his or her continuing education*

(i) Each individual must be encouraged to acquire, to the limit of his or her individual physical, mental, and emotional capacities, the basic knowledge and skills needed to comprehend and express ideas through words, numbers, and other symbols.

These basic skills fall into four broad categories:

(a) the ability to comprehend ideas through reading, listening, and viewing;

(b) the ability to communicate ideas through writing, speaking, and other visual and non-verbal media;

(c) the ability to understand and employ mathematical operations and concepts;

(d) the ability to apply rational or intuitive processes to the identification, consideration, and solution of problems.

(ii) Each individual should develop skills of inquiry, analysis, synthesis, and evaluation. Children who acquire such reasoning skills will be able to continue learning throughout their lives.

(1) The school must help the child to understand the nature of the environment in which he lives. It must help him to understand the human relationships involved in the working of his society, as well as the physical environment in which his society exists. In the Programme of Studies that follows, provision is made for growth in the understanding of the more intimate human relationships through literature; of society in its more organized forms through the social studies; of the physical environment through science and certain aspects of arithmetic.

(2) The school must seek to lead the child to choose and accept as his own those ideals of conduct and endeavour that a Christian and democratic society approves. This acceptance will depend largely upon the friendly personal relationship established between teacher and pupil, the kindly atmosphere and co-operative spirit of the school, and the purposeful manner in which the daily life of the school is conducted.

Detailed suggestions with regard to the teaching of Religious Education are not presented in this Programme. They will be found in the Departmental pamphlet *Regulations and Programme for Religious Education in the Public Schools, 1949;* and in the *Teachers' Guides to Religious Education,* published by The Ryerson Press, Toronto. Copies of these publications have been supplied to all schools. Religious teaching cannot be confined to separate periods on the timetable. It will affect the teaching of all subjects, and the wise teacher will be anxious, in the various departments of school activity, to bring home to the pupils, as far as their capacity allows, the fundamental truths of Christianity and their bearing on human life and thought.

(3) Finally, the school must assist the pupil to master those abilities that are essential to living in a modern society. It must be borne in mind that the school's historic function is to provide for the literacy of the population. When it was established, it was charged with the task of teaching all the children of the community to read, write, and cipher. The growing complexity of society has increased rather than diminished the need for all its members to be able to read efficiently and critically and to make simple calculations with accuracy.

The skills involved in communicating ideas and emotions to others and in receiving communications from them are provided for in the courses in English, Arithmetic, Art, and Music. The resourceful teacher will arrange his work so that many of the activities of the school, whether in the field of Science, of English, or of Social Studies will be organized to provide co-operative social experience.

– *develop and maintain confidence and a sense of self-worth*

(i) Education must make a major contribution to the intellectual, social, emotional, physical, moral, and cult al development of each individual.

(ii) Each individual must be encouraged to develop such attributes as intellectual curiosity, awareness, sensitivity, perseverance, and a desire for excellence.

(iii) Education must respond to each individual's need to develop a positive sense of self, including a desire for competence and continuing self-development and self-evaluation. The development of this sense of self-worth will enhance the individual's desire to understand and examine personal interests, abilities, and goals and to reassess them in keeping with the needs of an ever-changing environment.

– *gain the knowledge and acquire the attitudes that he or she needs for active participation in Canadian society*

(i) Education must prepare the individual child for life in our society by assisting him or her to gain insight into the functioning of society and the individual's role within it.

(ii) Education must assist individuals to gain an understanding of themselves as well as of persons belonging to social and cultural groups different from their own.

(iii) Education must assist individuals to develop the physical fitness and acquire the knowledge that will enable them to take advantage of the opportunities open to them for a satisfying and healthy life.

– *develop the moral and aesthetic sensitivity necessary for a complete and responsible life*

(i) Individuals should be given the opportunity to develop an appreciation of their cultural heritage, of the environment in which they live, of art, music, and literature, of the place of mathematics and science in the world's daily work, and of the importance of commerce and industry in the life of nations.

(ii) Education should encourage individuals to develop an appreciation of the ethics of their society and the conduct prescribed by such ethics.

(iii) Education must assist individuals to develop self-respect, respect for others, and respect for law.

(iv) Education must be conducted in such a way that each child may have the opportunity to develop abilities and aspirations without the limitations imposed by sex-role stereotypes or other forms of discrimination.

The Formative Years identifies a number of aims that are components of the preceding goals, as well as a number of more specific learning opportunities that contribute to each of these aims, thus establishing expectations for the programs developed for the Primary/Junior Divisions.

There are many ways of meeting these expectations in each jurisdiction, family of schools, or school. The setting of local objectives within the framework of the provincial aims should leave the principal and individual teacher the freedom to select and adapt the objectives, materials, and sequences that are likely to be the most profitable for the children. Since learning and teaching are complex activities, classroom objectives may emerge and change during the process of learning. This is because children learn in individual ways, which do not necessarily follow a prescribed sequence, and children and teachers must change their approches to meet the immediate demands of the tasks. There may be several ways of selecting material or tasks to meet any one learning objective.

APPENDIX B

DURING EACH YEAR OF THE INTERMEDIATE DIVISION, EACH STUDENT'S PROGRAM WILL INCLUDE EXPERIENCES WHICH WILL ENABLE THE STUDENT TO DEVELOP COMPETENCE AND FORMS OF DEVELOPMENT AS SET OUT IN THE FOLLOWING EXPECTATIONS:

1. To acquire, understand, and use basic mathematical concepts, and skills; that is:
   (a) To understand and use numbers in real life situations;
   (b) To understand and apply measurements and use measuring devices in solving practical problems;
   (c) To understand and use variables, equations, functions and algebraic expressions;
   (d) To apply statistics and probability to experiences of personal relevance.

2. To develop further the basic skills of language; that is:
   (a) To write about experiences, ideas, and feelings with greater clarity, logic, and sensitivity;
   (b) To articulate ideas, thoughts, and feelings with confidence and clarity;
   (c) To listen with sensitivity, understanding, and discrimination;
   (d) To read with enjoyment, understanding, and appreciation.

3. To understand the environment, both in terms of the nature of its parts and of the patterns that characterize it as a whole;

4. To broaden aesthetic perspectives, including skills awareness and attitudes that can be expressed through various artistic experiences and means;

5. To develop an increased knowledge of and pride in Canada;

6. To develop positive attitudes to physical fitness and an understanding of his or her physical and mental health;

7. To develop skills of inquiry and problem solving so that he or she develops as an independent learner and gains confidence in the ability to solve problems;

8. To develop further the ability to make informed and rational personal decisions;

9. To pursue personal aspirations in productive endeavour;

10. To develop an increased sense of self-awareness and a positive self-concept;

11. To develop a personal value system within a context that accepts the integrity of the individual and at the same time reflects the priorities of a concerned society;

12. To develop an understanding of social relationships.

Aims

The aims of the Intermediate Division history program are:

1. to develop an understanding of the Canadian identity and societal goals;
2. to develop an understanding of the roots of Canada's cultural heritage;
3. to develop a reasoned pride in Canada;
4. to develop an understanding of civic responsibility;
5. to develop an understanding of fundamental concepts central to the human experience, such as justice, change, diversity, order, individualism, the common good, worth of the individual, concern for others, dignity of labour, tradition, culture;
6. to develop the ability to imaginatively recreate the past;
7. to develop an awareness of the contributions of both women and men of all ages and groups to the development of our country;
8. to develop the ability to distinguish fact from opinion, to detect bias, to formulate an hypothesis, to evaluate and interpret evidence, to draw conclusions based on evidence, to synthesize, to speculate, to make judgements;
9. to develop an awareness of values and of value alternatives;
10. to develop research skills, including library skills, interviewing skills, and the ability to draw and select information from non-print as well as print resources;
11. to develop communication skills such as those used in recording information, in listening, and expressing ideas clearly and precisely in written, oral, and visual form.

General Objectives

1. To develop an understanding of the lives of people who immigrated to and settled in Canada: their reasons for emigrating; their settlement patterns; their differing problems and hardships; their social and cultural lives;
2. to develop an understanding of the achievement of Confederation: the concerns that existed; the significant events; the influence of various personalities;
3. to develop an understanding of Canada's post-Confederation expansion from sea to sea: railways, people, law, wheat, oil;
4. to understand that the development of Canada has been affected by people, events, and ideas in the United States;
5. to appreciate that social and economic stress has contributed to change throughout Canadian history;
6. to develop skills, concepts, and values as indicated in the aims for the Intermediate Division history program (see Aims, p. 6).

It is the responsibility of teachers at the local level to develop courses of study that achieve the stated intent and objectives.

REBELLIONS

Objectives

This unit will provide opportunities for students to:

1. consider different methods of resolving conflict;
2. examine questions and issues from more than one point of view;
3. examine the results of conflict;
4. examine the role of leadership in rebellion;
5. understand and appreciate the opinions of others.

APPENDIX C

(1) An Analysis of English Guidelines

- Carolynn Bennett

(2) Trends in Ministry Mathematics Guidelines

- Floyd White

(3) An Analysis of Physical and Health Education Guidelines 1950 - 1978

- Lucy Robinson
  Floyd Robinson

AN ANALYSIS OF ENGLISH GUIDELINES

Carolynn Bennett

The purpose of this paper is to analyze Ontario Ministry of Education English guidelines to determine the nature of trends indicated in the statements of aims and objectives. Using Primary/Junior and Intermediate English guidelines published by the Ontario Ministry of Education from 1942 to the present (See References), aims and objectives statements were read to determine the scope of the objectives treated and the scope of the context to which skill in the use of English was to be applied.

Primary/Junior - 1942

The general aims of an English program outlined in the 1942 document (1) were to develop the knowledge, skills and attitudes necessary in order that children learn (a) "to speak and write their mother tongue clearly, accurately, and gracefully", and (b) "to use good books as a source of information and pleasure" (1 - p. 35). Objectives were organized into three main categories - reading, oral language and written language. The important objectives at this level were:

Reading

(1) to provide "specific training in learning to read" (1 - p. 35). The content suggested in the document indicates that "learning to read" involved both a "sight" approach and a "phonetic" approach to beginning reading instruction. In both of these approaches, the individual word constitutes the most appropriate focus for

determining meaning.

(2) to provide "practice in 'audience' reading, verse-speaking and dramatization" (1 - p. 35). The notion of reading as a means of communicating information to others is evident in this objective.

(3) to provide "regular exercises designed to improve the children's ability to comprehend and enjoy what they read" (1 - p. 35). The suggested exercises for attainment of this objective were based on the reading of an entire passage, however, they were concerned only with recall of factual detail. The exercises did not appear until the Grade 4 level.

(4) to provide opportunities for "abundant reading in school and out" (1 - p. 35). Implicit in this objective is the maxim that children "learn to read by reading". The guideline also emphasizes "private" reading.

(5) "to cultivate...the love of reading and to form the habit of finding in books information and enjoyment" (1 - p. 35). It appears that the beliefs that a child can "extend his own education indefinitely" through books and that reading is a worthwhile leisure activity were thought to be important.

Oral Language

(6) to "include exercises such as informal conversation, story-telling, reporting on private reading, and where necessary, corrective exercises" (1 - p. 35). "Informal conversation" is cited as an important activity from Grade 1 through 6.

(7) to encourage children "to speak clearly and pleasingly" (1 - p. 36). Further, the guideline suggests that "seemly speech" should be given constant attention in all school activities.

Written Language

(8) to provide "training in sentence and paragraph structure, the writing of simple letters, stories and descriptions" (1 - p. 35). The guideline encourages teachers to provide written exercises to meet this objective that "emerge naturally from (the) work and play of the children". It also encourages the teacher to use the content from other disciplines (i.e. social studies and science) for "useful work" in writing.

(9) to provide for "the gradual acquisition of skill in the mechanics of written language - punctuation, spelling and writing" (1 - p. 35). It appears that there was a strong emphasis on a high standard of neatness in arrangement, legibility in writing and accuracy in spelling. A further comment suggests that "by the age of twelve, they (the children) should be able to write in ink with good legibility and fair speed".

Primary/Junior - 1960

There were no changes in the statements of aims and objectives between the 1942 document and the one published in 1960 (2). The only significant changes were in the detailed breakdown of topics by grade levels. The topic "verse-making" was dropped at the Grades 1, 3, 4, 5 and 6 levels. Several descriptors were also deleted from the more recent document, including the statement that "reasonable credit (be given) for mechanics in marking - (10%)" (1 - p. 57, 64).

Primary/Junior - 1975

The most recent document at this level, the Formative Years (3), for the most part, reiterated the objectives of the 1942 guideline, but added the following new objectives or emphases:

(1) "Listening" became a major category with "listen with sensitivity and discrimination" being cited as an important objective within this category (3 - p. 7).

(2) "Learning to read" is now seen as involving those "initial skills and processes that he or she finds most effective" (3 - p. 7); that is, syntactic, contextual, phonemic and graphemic cues .

(3) Teachers are instructed to encourage children to "become aware of deeper levels of meaning in reading" (3 - p. 13) by providing opportunities for the children to "go beyond mere comprehension and recall of factual detail" (3 - p. 13).

(4) There is no direct reference to "conversation" in the more recent document until the Junior level. Also, speaking "clearly and pleasingly" (1 - p. 36) becomes speaking "with confidence and lucidity" (3 - p. 8) in 1975.

(5) Writing as a means of communicating information to others is given much more emphasis in the Formative Years.

(6) All of the objectives in the Formative Years are considered "endeavours to provide a fuller life during a child's years in the Primary and Junior Divisions, and that endeavours to nurture every child's growth so that each may be able to continue his or her education with satisfaction and may share in the

life of the community with competence, integrity and joy" (3 - p. 4). Further, the guideline suggests that opportunities "to develop and maintain confidence and a sense of self-worth" (3 - p. 4) be provided. This notion was not evident in the earlier guidelines.

(7) Whereas the 1942 document provided a detailed breakdown of topics by grade levels; the Formative Years provides specific "aims" under which are listed a number of more detailed "learning opportunities". These aims are organized in terms of primary and junior divisions rather than by grade level.

(8) The document published in conjunction with the Formative Years, Education in the Primary and Junior Divisions maintains that reading, writing, listening and speaking must be taught in relation to one another. There was no indication in the 1942 document that this was the desired approach to English.

Intermediate - 1942

The general aims for English outlined in the 1942 Intermediate guideline (4) are similar to those in the 1942 Grade I to VI guideline, however, the following differences or additions were noted:

(1) The order of the aims was different in that developing a "genuine and abiding love of good reading" was referred to as the "primary aim" and developing in the children "the power to express themselves correctly and effectively in oral and written language" was a "secondary aim" (4 - p. 40).

(2) The specific content was organized under fewer headings than the I - VI document. It was also noted that the headings - Reading, Creative Composition, Oral Communication, Communication in Writing and Usage - were not "separate spheres of activity" (4 - p. 41) but should be taught in relation to one another.

(3) "Grammar" was to be taught for its usefulness and the "greater part of this grammatical work should be oral" (4 - p. 42).

Intermediate - 1950, 1951

The two documents published in the early 1950's will be dealt with together as one guideline is simply a revision of the other (5, 6). The only major difference between the English section of the two documents is that the 1950 version contains a Grade 7 course outline and the 1951 version contains an outline for Grade 8. These guidelines indicate a change in their statements of aims and objectives from those found in the 1942 guideline. The focus of the aims and objectives was expanded in the following ways:

(1) The scope of contexts to which English would be applied was much broader. "Adequate skill in the use of English is essential to progress in all subjects of the curriculum, in meeting the practical demands of everyday life, and in fulfilling the duties of citizenship in a democracy" (6 - p. 23).

(2) Thinking skills emerge in these documents as being important aims of an English program. The study of English is cited as helping pupils "to think clearly", increasing "the pupils' powers of thinking", and encouraging them "to be more exact in their thinking" (6 - p. 23).

(3) There is greater emphasis on the child as an individual who has "personal opinions" and whose "personal growth" is at stake (6 - p. 23).

(4) Literature is introduced as a topic for study in these guidelines. "The main objectives in the study of literature are the cultivation of a taste for good reading, the enlargement of experience, the stimulation of the imagination, the enrichment of knowledge, and the development of character" (6 - p. 26). Further, the guidelines suggest that the study of literature should be "extensive" (6 - p. 26).

(5) Complex reading skills such as "testing an opinion" (6 - p. 28) and "making critical judgements" are introduced at this point.

(6) The importance of the library is made more obvious in these documents with the inclusion of specific library skills in the content section.

(7) Specific objectives in writing include

(a) to encourage pupils to make their own observations and to record their own thoughts within a widening range of experiences,

(b) to stimulate them to explore and elaborage these ideas and to develop their own powers of thinking, and

(c) to enable them to convey to other people the results of their thinking as clearly and completely as possible (6 - p. 41).

It is interesting to note that a suggested method of accomplishing these objectives is to adhere to an organizing skill list (i.e. determining purpose, planning the attack, locating and recording material, selecting pertinent material, arranging material" (6 - p. 42-3).

(8) There is a strong emphasis on grammar which is illustrated by the extensive list of facts listed in the content section under the heading Thought, Structure and Grammar (6 - p. 46-9).

(9) The Handwriting section suggests that "responsibility for handwriting is shared by all teachers, but the teacher of English assumes the primary responsibility" (6 - p. 50). This is the first indication in any of the guidelines that all teachers share responsibility for an aspect of the English program.

Intermediate - 1969

The 1969 English document (7) indicates a significant change in the intent of English and a subsequent reduction of the scope of objectives to be covered. The substance of the guideline is based on the premise that "human beings learn through activity and retain best what they have come to understand through their own initiative" (7 - p. 3). The document is concerned, therefore, with "the learning experience of each student rather than with the performance of his teachers" (7 - p. 3). Further, the authors argue that English should not be segmented; but rather thought of in terms of "a dynamic process in which experience and expression are central factors" - a process that is "intimately linked with personal growth and the human need for communication" (7 - p. 3). Although no set of objectives was provided, the concept of English as a "vehicle of learning" is illustrated by the following statements:

(1) "The receptive aspect of the English program will include the traditional facets of listening and reading as well as the

contemporary addition of viewing and the deeper participation of observing" (7 - p. 3).

(2) "The expressive aspect of the program will include not only speaking and writing but also such activities as creative drama, film-making, and other visual art forms" (7 - p. 3).

(3) "The English program must be an integrated one, building upon experiences that are vital to the students. It should include discussing, talking, viewing together, considering, and sharing ideas" (7 - p. 6).

(4) "In an English program, the emphasis must be on oral expression not only as an end in itself but also as one of the most effective prerequisites for written communication" (7 - p. 6).

Intermediate - 1977

The most recent Intermediate English document (8) introduces seven general aims that are to be viewed from the perspective of the student, the parents, and society. Whereas the 1969 document reversed the emphasis from "instruction" to "learning", the present document includes objectives for the principal and the teacher as well as for the learner. For the most part, this guideline reiterated the objectives of the Formative Years but added the following new objectives or emphases:

(1) The general aims speak of "understanding" such things as personal and societal goals, so that a "knowledge" component is clearly envisaged. As for possible types of knowledge, guideline reference to "appreciation of literature" (8 - p. 5) suggests knowledge of the products of language, and on the other hand, it speaks of the processes by which language operates (8 - p. 5).

(2) For the first time, the Ministry has included a policy statement on language which reflects current thinking about language. Particular aspects of language or language study are included in the document as "Resources".

(3) Distinctions between grades were made to provide general advice on the course rationale, management and general advice on teaching English at the particular grade levels. The content is not listed in grades or divisions as it has been in the past. The types of activities that could be used as "vehicles" to attain the objectives are in a separate section, as is the "Criteria for Program Evaluation" (8 - p. 24).

(4) An integrated approach to language is promoted in this document in a more realistic and practical manner than it has been in the past. The resource section is, for example, designed specifically to support this philosophy. The present guideline appears to be an extension of the 1950-51 guidelines although it has maintained the philosophy inherent in the 1969 publication.

(5) The "thinking skills" introduced" in the 1950-51 guidelines are expanded to include such objectives as

> :to provide the students with the opportunity to assess the relevance and credibility of evidence, and
>
> :to provide the students with the opportunity to begin to develop a personal stock of criteria for evaluating the ideas, procedures, and alternatives communicated by various means. (8 - p. 10)

In reference to thinking as well, the guideling mentions both "simple skills" (e.g. formulate questions, make inferences) and

"complex skills" (e.g. problem solving, critical thinking).

(6) Reading, speaking and writing skills are expanded somewhat to reflect the general aims of the program. The guideline uses the term "decoding" (8 - p. 27) in reference to reading. "Listening" has been included in this document as in the Formative Years and is referred to as a "decoding" skill as well.

(7) A "valuing" section has been introduced in the present document whereby the student will be given opportunities "to appreciate the role and value of language and literature in one's life" (8 - p. 13).

(8) This guideline maintains that "appreciably more than half the classroom time should be devoted to providing students with opportunities to be actively involved in reading and writing" (8 - p. 8). No previous guideline has been this direct in discussing classroom time.

(9) A further policy statement that has never appeared before is that the principal will insist "that all teachers be familiar with these guidelines, that they understand the role that language plays in all areas of the curriculum, and that they recognize their role in language development in their particular subject fields.

REFERENCES

(1) Programme of Studies for Grades I to VI of the Public and Separate Schools, 1941.

(2) Programme of Studies for Grades 1 to 6 of the Public and Separate Schools, 1960. (A reprint of the 1955 edition with minor revisions)

(3) Circular P1J1, The Formative Years, 1975.

(4) Programme of Studies for Grades VII and VIII of the Public and Separate Schools, 1942.

(5) Intermediate Division, Outlines of Courses for Experimental Use, Curriculum 1:1, 1950.

(6) Intermediate Division, Outlines of Courses for Experimental Use, Curriculum 1:1 (Revised), 1951.

(7) English, Intermediate Division, 1969.

(8) Intermediate Division English, 1977.

TRENDS IN MINISTRY MATHEMATICS GUIDELINES

Floyd White

Introduction

The purpose of this paper is to analyze Ontario Ministry of Education Mathematics guidelines to determine the nature of trends indicated in the statements of aims and objectives.

Procedure

Using Intermediate Mathematics guidelines published by the Ontario Ministry of Education from 1942 to the present, aims and objectives statements were read to determine the scope of the objectives treated, and the scope of the context to which mathematics learning was to be applied.

Scope of Objectives

The ICPOGMU category system was used as a criterion against which to determine the scope of objectives indicated in the different Ministry guidelines. Four general levels of objective classification can be identified using this category system. A rather "messy" attempt was made to classify the various guidelines according to this four-category system. Unfortunately, the language used to describe objectives in these documents was such that precise assignment to a level of classification was difficult. It was possible, however, to determine general comparisons of the different guidelines based on the category framework. The scope of contexts to which the mathematics learning would be applied can generally be classified in three groups: social contexts, such as self, family, small groups, society; geographical contexts, such as home, community, country, school; and academic contexts, such as other disciplines and advanced mathematical studies. The scope of

the contexts was determined by the number of these various contexts to which the guideline referred.

Sources of Information

Four sets of Intermediate Mathematics guidelines were read to determine the scope of objectives and contexts. The study was limited to Intermediate Mathematics guidelines because of the time constraints involved.

1. Ontario Department of Education, Programme of Studies for Grades VII and VIII of the Public and Separate Schools, 1942.
2. Ontario Department of Education, Outlines of Courses for Experimental Use, Intermediate Division, 1951.
3. Ontario Department of Education, Curriculum Documents I-12-A, I-12-B, I-12-C, and I-12-D, Mathematics for the Intermediate Division, 1964.
4. Ontario Ministry of Education, Mathematics, Intermediate Division, Draft Copy, 1977.

Conclusions

Generally speaking, the only significant change in Ministry directions indicated in the four sets of guidelines observed was during the introduction of the set of guidelines issued in 1962 to 1964. If one were to remove that set of guidelines from the sequence, a very gradual expansion of the objectives indicated in the guidelines could be observed. The 1942 guideline indicated objectives ranging through the cognitive, affective, and psychomotor domains, and through the categories of knowing that, being able to, knowing how to linked affect, and being able to linked affect. Statements appearing on page 58 suggest that the student should gain a feeling of confidence and a desire to study (affective objectives). He should be "able to apply knowledge and processes". An important result of the study of mathematics should be

the growth of "proper attitudes toward social matters". Skill objectives found on page 59 include: "the skill to communicate from words, symbols and diagrams" and "use integers fractions to solve problems in school, home and community". Some emphasis was placed on the complex skill of problem solving to the point where an elementary problem solving model was outlined in which the student was required to read the problem, develop a framework to organize the given information, plan a method by which to collect the missing information, collect that data, estimate answers, apply algorithms, and check the accuracy of the algorithm. In the 1942 guideline, mathematical knowledge objectives were somewhat limited. The student was expected to gain knowledge of mathematics and language notations, elementary principles of geometry, elementary principles in the field of algebra, and the use of literal numbers. The guideline did go on, however, to state that these abstract ideas come to have meaning to the pupils only through their application in a variety of situations made as concrete as possible.

The Intermediate Division 1951 guideline gave problem solving and complex skills more emphasis. It also included a section on values related to conservation. Some emphasis was placed on mental algorithmic proficiency which did not appear in the 1942 guideline. More emphasis was given to such traits as critical judgment, evaluation, accuracy, neatness, and precision. While the specifics of the objectives differed slightly from 1942 to 1951, the range of objectives show marginal increase. Objectives could be classified under knowing that, knowing how to, being able to, knowing how to linked affect, and values.

The 1962 document indicated a significant change in the objectives of mathematics instruction, constituting, essentially, a reduction of their scope.

Envisaging a rapidly changing world and an unpredictable future, emphasis was changed from the practical application of mathematics to the development of the skill of learning itself. It appeared, however, that this skill was to be developed through a knowledge base; i.e., by providing the student with knowledge that he could apply to any new circumstance.

For this reason, the major objectives in the 1962 document appear as knowledge objectives. Included among these objectives are properties of numbers, meaning of geometric figures, knowledge of an enumeration system, knowledge of the language of mathematics, and knowledge of relationships. Mention is made of problem solving as a direct application of the learned algorithm, but no mention is made of problem solving as it would apply to real-life situations, and no indication is given as to its intended complexity.

The 1977 guideline reversed the emphasis placed on knowledge when it stated: "The underlying structures of mathematics are not intended to be studied in their abstract forms". While mathematics literacy and mathematical concepts are mentioned as objectives, the guideline leaves no doubt that the major emphasis is on the development of skills and their application to real-life situations. For example, where the 1942 guideline suggests somewhat vaguely that students should be able to construct a model of a problem, the 1977 guideline clearly indicates "model building" and "building algebraic formulae" as significant objectives. Thus the 1977 guideline restores the prominence accorded problem solving; but now, a more complex model of making sense of the real world (building a model of the problematic situation, applying algorithms and projecting the solutions back on the real world) is called for.

Scope of Contexts

The 1942 document placed significant emphasis on real-life contexts for mathematics outcomes: the home, community, school and consumer world are particularly mentioned. A clear distinction is made between mathematics in the consumer context and mathematics as used by bankers, merchants and agents; this indicates a clear intent to provide a mathematics program with a practical, real-life application.

A significant change in the Intermediate Division 1951 document was the addition of the natural environment as a context in which mathematics has to be used. The social, economic, daily life, home, community, and civilization in general, are indicated as other contexts.

The 1962 document purposely does not indicate contexts. The reason given is that the rapidly changing world of the sixties cast the precise nature of any future relevant contexts in doubt. Reference is made, however, to the fact that the mathematics learned in an earlier grade would be applied to more advanced mathematics, so that the discipline itself was envisaged as a relevant context.

The 1977 document returns to a real-life context and indicates culture, the student's world, other disciplines, industry, commerce, sports, recreation, groups and the home as being contexts in which mathematics should be applied.

Summary

When one discounts the 1962 anomaly, little change in the scope of objectives is noticed from 1942 to 1977, except for the advocacy of a more complex form of problem solving in the 1977 document. The contexts to which mathematics apply have expanded in that the natural environment was added in 1951, and a more specific delineation of the student's world was outlined in 1977. Again the 1962 group constitutes an anomaly in the trends indicated by the other three decades.

AN ANALYSIS OF PHYSICAL AND HEALTH EDUCATION GUIDELINES

1950 - 1978

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I. Aims and Objectives

Early 1950's

Grades I-VI: The important objectives at this grade level were:

(1) to "develop proper health habits", and "imparting the knowledge that forms the basis for understanding why such habits are desirable" (6-1, p.24).

(2) to preserve "mental health": (although this term was not defined, it appears to be a less active form of the modern conception of "a positive self-concept" in that it depended upon children "having reasonable success in the activities in which they engage" and was thought to be impaired by such things as "partiality, sarcasm, and ridicule"). (6-1, p.25)

(3) to develop fundamental motor skills (e.g., throwing, kicking, jumping). (5-6, p.3)

(4) to develop "attitudes" of honesty, spirit of fair play, tolerance for others, self-confidence, courage, and self-control (5-6, p.3).

(5) to develop group-oriented traits such as leadership and cooperation (5-6, p.3).

(6) knowledge of safety and first aid procedures (6-1, p.27).

Intermediate: The general aims were similar to those for the Primary-Junior Divisions, with this possible addition:

(1) to develop an interest in physical activities that will carry over into leisure time (5-5, p.5).

There was some difference in the boys' and girls' physical education programs, with the girls' putting heavier stress on rhythmics (5-5, p.45), and non-competitive games (5-5, p.35), while the boys' programs put heavier stress on individual athletic activities of a competitive nature (5-5, p.11); the boys' programs also advocated obstacle course training, which was presumed to develop "courage, endurance, agility, and self-confidence in the individual" (5-5, p.10).

The health program, which was regarded as "the theory of physical education" dealt with (a) the basic physiology and mechanics of action, and (b) physiological, interpersonal, and psychological aspects of growth. The rhythmics program for girls was intended to provide an opportunity for creative activities.

Early and Mid-1960's

Evidently there were few substantial changes in objectives during this period (6-1; 6-11, p.1), although the following minor changes may be noted:

(a) there was a reorganization and expansion of the health (knowledge) component under the titles: Growth and Change, in grade 7; Understanding Early Adolescence, in grade 8; Further Study of Adolescence, in grade 9; and Controlling the Body, in grade 10.

(b) part of this expansion was the beginnings of what today would be described as "sex education", whose objective was "to give the pupil a simple explanation of the reproductive system and the process of reproduction, and to provide an acceptable vocabulary relating to the reproductive organs (6-11, p.29).

(c) a similar start was made toward what would now be termed "drug education", its objectives being "to outline to the student the value of certain chemicals when used properly, and to outline the nature of dependency that might arise when they are used improperly" (6-11, p.34).

Late 1960's to Mid-1970's

Primary-Junior: A significant shift or expansion of focus occurred with the release of the 1967 document Physical and Health Education, Interim Revision. Although no set of "objectives" was provided, they can be inferred from sections on Evaluation (6-11-a, p.22) and The Nature of Modern Physical Education (6-11-a, p.5).

The objectives stressed in this approach were:

(a) to develop the ability of "body management": the integration of the actions of various body parts to solve a problem "involving the relationship of the body and its movements to the room in which the child is working, to the equipment he is using, and to the people with whom he works" (6-11-a, pp.9-10). Such an outcome was designated "the ability to solve problems in movement" (6-11-a, p.22).

(b) to develop the related knowledge of movement principles, as well as a "movement vocabulary" (6-11-a, p.22).

(c) to develop the ability for expressive movement through creative dance, an objective for both sexes (6-11-a, p.19).

(d) to develop the capacity for enjoyment of expressive movement and a positive evaluation of quality in movement (6-11-a, p.22).

(e) to develop self-confidence and interpersonal skills (6-11-a, p.22).

(f) to develop "sound health habits based on accurate information" and "practices to prevent injuries and loss of life" (6-11-a, p.25).

Knowledge was organized around "ten concepts" which stressed the relationship of growth or health factors to the environmental, social, and personal factors.

Intermediate: For the most part, this guideline reiterated the objectives of the Primary-Junior Division, but added the following new objectives or emphases:

(a) to develop the ability to cope with stress; to make decisions; and to develop facility in problem solving in general as well as the ability to deal with "the many problems he (the adolescent) faces as a result of changes occurring in his body" (7-8, p.1).

(b) to develop responsiveness to the needs of others.

Guidelines at this time, including those in physical and health education, put a heavy stress on the collaborative development of objectives and activities by the teacher and student.

II. Contents of Guidelines

The physical and health education documents reflect the tendencies visible in other subject areas. Thus, the documents of the early 1950's gave a detailed breakdown of topics by grade levels (6-1, 5-6), or by divisions with suggested sequences within them (5-5, 5-7). This practice continued into the 1960's (5-7, 6-11).

Beginning with the 1967 Primary-Junior document (6-11-a), grade suggestions were completely discontinued, and the amount of material that could be

incorporated directly into specific lesson plans declined drastically, being replaced by more general sorts of advice on the course rationale, management, methods of evaluation, types of activities, general advice on teaching, and topics for health education (6-11-a, 7-8). No new physical education document has been released since the initiation of the "back-to-the-basics" thrust, so one cannot tell whether the trend toward more extensive teaching materials seen in other disciplines, will occur here.

III. Views of Society, the Learner, and the Discipline Appearing in Physical and Health Education Documents

These documents have not contained much content concerned with the nature of the educated person, the nature of the discipline, or a model of the learner, although their general aims could certainly be said to suggest how that area of activity contributes to the qualities envisaged in the educated person (e.g., many of the traits called for in the physical education program are clearly related to the 1937 image of the educated person).

Throughout the quarter century under study, the primary and junior grades documents have expounded a species of developmental psychology associated with Gessell and Ilg, which assumed that students pass through invariant stages of social and psychological development:

> This is the period when the gang or club is all important--the 9 to 11 year-old feels that he must conform to the group pattern--a sense of loyalty to its members is very strong and he has a great need of their approval. (5-7, p.2)

Moreover, it was assumed that students who did not conform to this expectation should be objects of concern.

> There will always be the child who is not accepted by the group and who needs special help. (5-7, p.2)